

Table 4-2  
Land Use and Environmental Data for Primary Route Evaluation (Primary Segments)  
Primary Alternative Segments 10/05/2018

Evaluation Criteria	R1	R2	S	S1	S2	T	T1	T2	U	U1	U2	V	V1	V2
1 Length of primary alternative segment (miles)	10.4	0.2	7.3	2.7	8.3	14.4	4.5	3.0	5.0	0.4	11.2	9.6	0.8	3.8
2 Number of habitable structures <sup>1</sup> within 500 feet of ROW centerline	11	0	0	0	0	0	0	0	2	0	0	1	0	0
3 Length of ROW using existing transmission line ROW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4 Length of ROW parallel and adjacent to existing transmission line ROW	9.6	0.0	6.5	2.7	0.0	0.6	0.0	0.0	0.0	0.0	4.1	0.0	0.0	0.0
5 Length of ROW parallel and adjacent to existing 345-kV transmission line ROW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6 Length of ROW parallel and adjacent to existing 138-kV transmission line ROW <sup>2</sup>	9.6	0.0	0.0	2.7	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 Length of ROW parallel and adjacent to existing 69-kV transmission line ROW	0.0	0.0	6.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.1	0.0	0.0	0.0
8 Length of ROW parallel and adjacent to other existing ROW (roadways, railways, etc.)	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.4	0.0	0.0	0.0	0.0
9 Length of ROW parallel and adjacent to apparent property lines <sup>3</sup>	0.0	0.0	0.0	0.0	5.9	7.6	0.0	3.0	2.0	0.0	8.2	7.6	0.0	3.8
10 Length of ROW across parks/recreational areas <sup>4</sup>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11 Number of additional parks/recreational areas <sup>4</sup> within 1,000 feet of ROW centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 Length of ROW across University Lands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 Length of ROW through cropland	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14 Length of ROW through pasture/rangeland	8.8	0.1	7.2	2.7	8.2	14.4	0.6	3.0	5.0	0.4	10.2	9.0	0.7	3.8
15 Length of ROW through land irrigated by traveling systems (rolling or pivot type)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16 Length of ROW parallel and adjacent to existing natural gas pipelines (steel and 6" diameter or greater) <sup>5</sup>	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17 Number of pipeline crossings <sup>5</sup>	15	0	2	2	0	2	2	0	2	0	0	0	0	0
18 Number of transmission line crossings	1	2	0	0	0	0	0	0	1	0	0	1	1	0
19 Number of IH, US, and state highway crossings	1	1	0	0	1	0	0	0	1	0	0	0	1	0
20 Number of FM road crossings	0	0	0	0	0	0	1	0	0	0	0	1	0	0
21 Number of cemeteries within 1,000 feet of the ROW centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 Number of FAA registered public/military airports <sup>6</sup> with at least one runway more than 3,200 feet in length located within 20,000 feet of ROW centerline	1	0	0	0	0	0	0	0	0	0	0	0	0	0
23 Number of FAA registered public/military airports <sup>6</sup> having no runway more than 3,200 feet in length located within 10,000 feet of ROW centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24 Number of private airstrips within 10,000 feet of the ROW centerline	0	0	0	0	0	0	0	0	1	0	0	1	0	0
25 Number of heliports within 5,000 feet of the ROW centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26 Number of commercial AM radio transmitters within 10,000 feet of the ROW centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27 Number of FM radio transmitters, microwave towers, and other electronic installations within 2,000 feet of ROW centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aesthetics														
28 Estimated length of ROW within foreground visual zone <sup>7</sup> of IH, US, and state highways	2.9	0.2	7.3	2.7	0.6	0.3	4.1	0.0	1.4	0.4	0.0	0.0	0.8	0.0
29 Estimated length of ROW within foreground visual zone <sup>7</sup> of FM roads	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.6	0.0	0.0
30 Estimated length of ROW within foreground visual zone <sup>7(a)</sup> of parks/recreational areas <sup>4</sup>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ecology														
31 Length of ROW through upland woodlands/brushland	0.9	0.0	0.1	0.0	0.1	0.1	3.8	0.0	0.0	0.0	1.2	0.0	0.0	0.0
32 Length of ROW through bottomland/riparian woodlands	0.6	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.1
33 Length of ROW across NWI mapped wetlands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
34 Length of ROW across known habitat of federally listed endangered or threatened species	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
35 Length of ROW across open water (lakes, ponds)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
36 Number of stream crossings	9	0	2	5	1	1	6	0	1	0	3	5	0	1
37 Number of river crossings	0	0	0	0	0	0	0	0	0	0	0	0	0	0
38 Length of ROW parallel (within 100 feet) to streams or rivers	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
39 Length of ROW across 100-year floodplain	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cultural Resources														
40 Number of recorded cultural resource sites crossed by ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41 Number of additional recorded cultural resource sites within 1,000 feet of ROW centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0
42 Number of NRHP listed properties crossed by ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43 Number of additional NRHP listed properties within 1,000 feet of ROW centerline	0	0	0	0	0	0	0	0	0	0	0	0	0	0
44 Length of ROW through areas of high archaeological site potential	2.4	0.0	1.2	1.7	1.2	2.3	4.5	1.8	0.6	0.2	1.9	2.0	0.0	1.2

Notes:

<sup>1</sup>Single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, business structures, churches, hospitals, nursing homes, schools, or other structures normally inhabited by humans or intended to be inhabited by humans on a daily or regular basis within 500 feet of the centerline of a transmission project of 230-kV or more.

<sup>2</sup>The data associated with paralleling 138-kV transmission lines includes an existing 69-kV transmission line that is being upgraded for operation at 138-kV prior to the completion of the Proposed Project.

<sup>3</sup>Apparent property lines created by existing roads, highways, or railroad ROWs are not "double counted" in the length of ROW parallel to apparent property boundaries criteria.

<sup>4</sup>Defined as parks and recreational areas owned by a governmental body or an organized group, club, or church within 1,000 feet of the centerline of the project.

<sup>5</sup>Only pipelines six inches and greater in diameter carrying petrochemicals were quantified in the pipeline crossing and paralleling calculations.

<sup>6</sup>As listed in the Chart Supplement South Central U.S. (FAA 2018b) formerly known as the Airport/Facility Directory South Central U.S.) and FAA 2018a.

<sup>7</sup>One-half mile unobstructed. Lengths of ROW within the visual foreground zone of interstates, US and state highway criteria are not "double counted" in the length of ROW within the visual foreground zone of FM roads criteria.

<sup>7(a)</sup>One-half mile unobstructed. Lengths of ROW within the visual foreground zone of parks/recreational areas may overlap with the total length of ROW within the visual foreground zone of interstates US and state highway criteria and/or with the total length of ROW within the visual foreground zone of FM roads criteria.

All length measurements are shown in miles unless noted otherwise. All linear measurements were obtained from aerial photography ( flown March, 2018 with the exception of high probability areas for archeological resources/resources which were measured from the USGS Topographic Quadrangles. The aerial photography was orthorectified to National Map Accuracy Standards of +/- 9 feet.

Table 4-2  
Land Use and Environmental Data for Primary Route Evaluation (Primary Segments)  
Primary Alternative Segments 10/05/2018

Evaluation Criteria	W	W1	W2	X	X1	X2	Y	Y1	Y2	Z	Z1	Z2
1 Land Use												
2 Length of primary alternative segment (miles)	5.1	1.2	3.8	8.9	4.5	2.4	2.6	3.8	3.3	3.1	0.5	0.8
3 Number of habitable structures <sup>1</sup> within 500 feet of ROW centerline	0	0	0	0	0	0	0	0	0	0	0	0
4 Length of ROW using existing transmission line ROW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 Length of ROW parallel and adjacent to existing transmission line ROW	5.1	0.9	3.6	6.2	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.0
6 Length of ROW parallel and adjacent to existing 345 kV transmission line ROW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7 Length of ROW parallel and adjacent to existing 138-kV transmission line ROW <sup>2</sup>	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8 Length of ROW parallel and adjacent to existing 69-kV transmission line ROW	5.1	0.0	3.6	6.2	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.0
9 Length of ROW parallel and adjacent to other existing ROW (roadways, railways, etc.)	0.0	0.0	0.2	0.0	1.6	0.0	0.0	3.5	1.1	0.0	0.3	0.1
10 Length of ROW parallel and adjacent to apparent property lines <sup>3</sup>	0.0	0.0	0.0	0.5	2.9	0.0	0.7	0.0	0.0	3.1	0.0	0.0
11 Length of ROW across parks/recreational areas <sup>4</sup>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12 Number of additional parks/recreational areas <sup>4</sup> within 1,000 feet of ROW centerline	0	0	0	0	0	0	0	0	0	0	0	0
13 Length of ROW across University Lands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.1	0.0	0.0
14 Length of ROW through cropland	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 Length of ROW through pasture/rangeland	4.0	1.2	3.8	8.8	4.5	2.3	2.6	3.8	3.2	3.1	0.4	0.8
16 Length of ROW through land irrigated by traveling systems (rolling or pivot type)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17 Length of ROW parallel and adjacent to existing natural gas pipelines (steel and 6" diameter or greater) <sup>5</sup>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18 Number of pipeline crossings <sup>5</sup>	0	0	1	0	0	2	0	0	2	2	0	0
19 Number of transmission line crossings	0	0	0	0	0	0	1	0	0	0	1	1
20 Number of IH, US, and state highway crossings	0	0	0	0	0	0	0	1	0	0	1	1
21 Number of FM road crossings	0	1	0	0	1	1	0	0	1	0	0	0
22 Number of cemeteries within 1,000 feet of the ROW centerline	0	0	0	0	0	0	0	0	0	0	0	0
23 Number of FAA registered public/military airports <sup>6</sup> with at least one runway more than 3,200 feet in length located within 20,000 feet of ROW centerline	0	0	0	0	0	0	0	0	0	0	0	0
24 Number of FAA registered public/military airports <sup>6</sup> having no runway more than 3,200 feet in length located within 10,000 feet of ROW centerline	0	0	0	0	0	0	0	0	0	0	0	0
25 Number of private airstrips within 10,000 feet of the ROW centerline	0	0	0	0	1	0	0	0	0	0	0	0
26 Number of heliports within 5,000 feet of the ROW centerline	0	0	0	0	0	0	0	0	0	0	0	0
27 Number of commercial AM radio transmitters within 10,000 feet of the ROW centerline	0	0	0	0	0	0	0	0	0	0	0	0
28 Number of FM radio transmitters, microwave towers, and other electronic installations within 2,000 feet of ROW centerline	1	1	0	0	1	0	0	1	0	0	0	0
Aesthetics												
29 Estimated length of ROW within foreground visual zone <sup>7</sup> of IH, US, and state highways	0.3	1.2	0.8	0.0	0.3	0.0	0.7	3.8	0.0	0.0	0.5	0.6
30 Estimated length of ROW within foreground visual zone <sup>7</sup> of FM roads	0.0	0.0	0.0	0.0	3.9	0.6	0.0	0.0	1.8	0.3	0.0	0.0
31 Estimated length of ROW within foreground visual zone <sup>7(b)</sup> of parks/recreational areas <sup>4</sup>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ecology												
32 Length of ROW through upland woodlands/brushland	1.1	0.0	0.2	0.4	0.0	0.1	0.0	0.0	0.1	1.3	0.0	0.0
33 Length of ROW through bottomland/riparian woodlands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
34 Length of ROW across NWI mapped wetlands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
35 Length of ROW across known habitat of federally listed endangered or threatened species	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
36 Length of ROW across open water (lakes, ponds)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
37 Number of stream crossings	2	0	1	1	0	0	1	1	0	0	0	0
38 Number of river crossings	0	0	0	0	0	0	0	0	0	0	0	0
39 Length of ROW parallel (within 100 feet) to streams or rivers	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40 Length of ROW across 100-year floodplain	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cultural Resources												
41 Number of recorded cultural resource sites crossed by ROW	0	1	0	0	0	0	0	0	0	1	0	0
42 Number of additional recorded cultural resource sites within 1,000 feet of ROW centerline	0	0	0	0	0	0	0	0	0	1	0	0
43 Number of NRHP listed properties crossed by ROW	0	0	0	0	0	0	0	0	0	0	0	0
44 Number of additional NRHP listed properties within 1,000 feet of ROW centerline	0	0	0	0	0	0	0	0	0	0	0	0
45 Length of ROW through areas of high archaeological site potential	1.3	0.9	0.4	1.3	1.9	0.0	0.7	1.3	0.7	2.0	0.0	0.0

Notes

<sup>1</sup>Single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, business structures, churches, hospitals, nursing homes, schools, or other structures normally inhabited by humans or intended to be inhabited by humans on a daily or regular basis within 500 feet of the centerline of a transmission project of 230 kV or more.

<sup>2</sup>The data associated with paralleling 138 kV transmission lines includes an existing 69 kV transmission line that is being upgraded for operation at 138-kV prior to the completion of the Proposed Project.

<sup>3</sup>Apparent property lines created by existing roads, highways, or railroad ROWs are not "double-counted" in the length of ROW parallel to apparent property boundaries criteria.

<sup>4</sup>Defined as parks and recreational areas owned by a governmental body or an organized group, club, or church within 1,000 feet of the centerline of the project.

<sup>5</sup>Only pipelines six inches and greater in diameter carrying petrochemicals were quantified in the pipeline crossing and paralleling calculations.

<sup>6</sup>As listed in the Chart Supplement South Central U.S. (FAA 2018b) formerly known as the Airport/Facility Directory South Central U.S.) and FAA 2018a.

<sup>7</sup>One-half mile, unobstructed. Lengths of ROW within the visual foreground zone of interstates, US and state highway criteria are not "double-counted" in the length of ROW within the visual foreground zone of FM roads criteria.

<sup>7(b)</sup>One-half mile, unobstructed. Lengths of ROW within the visual foreground zone of parks/recreational areas may overlap with the total length of ROW within the visual foreground zone of interstates US and state highway criteria and/or with the total length of ROW within the visual foreground zone of FM roads criteria.

All length measurements are shown in miles unless noted otherwise. All linear measurements were obtained from aerial photography flown March, 2018 with the exception of high probability areas for archaeological/historical resources which were measured from the USGS Topographic Quadrangles. The aerial photography was orthorectified to National Map Accuracy Standards of +/- 9 feet.

### **4.1.3 Impacts on Water Resources**

Throughout the routing process, consideration was given toward minimizing potential impacts to surface waters and associated NWI mapped wetlands. For example, POWER attempted to minimize the length of ROW parallel to streams. TPWD recommended crossing streams at right angles at their narrowest sections to avoid potential impacts. Crossings of these areas were minimized by maintaining a perpendicular angle at each crossing where practical. Additional TPWD guidelines reviewed for construction and clearing within riparian areas are provided in Appendix A.

#### **4.1.3.1 Surface Water**

Surface waters within the study area typically include ephemeral, intermittent or perennial streams, drainages, draws, and ponds. If surface waters are crossed, the proposed transmission line will span all surface water crossings, with the structure foundations located outside of the ordinary high water lines. No construction activities are proposed for the project that will significantly impede the flow of water within these watersheds. Vegetation removal at these surface water crossings will be performed in a manner to diminish damage to the natural condition of the area and in accordance with USACE requirements. Erosion control devices will be implemented in accordance with a SWPPP to reduce the potential for sedimentation outside of the ROW. The proper inspection and maintenance of these erosion control devices will minimize the potential for erosion of exposed soils on the ROW and deposition of sediments into surface waters.

All of the primary alternative routes cross streams or creeks. These streams were identified from the NHD database. However, the actual hydrology of some of these streams may have been altered or affected by construction of drainage ditches/canals, levees, impoundments, residential areas, etc. The number of stream crossings range from 13 for Route 7, to 36 crossings for Route 18. No rivers are crossed by any of the primary alternative routes and none of the primary alternative routes were identified to have any length of ROW across open water (lakes, ponds). Sixteen of the primary alternative routes have some length of ROW parallel (within 100 feet) to streams. The length of ROW parallel (within 100 feet) to streams ranges from 0.0 (zero) mile for Routes 2, 4, 5, 6, 7, 11, 12, 14, and 22, to approximately 0.9 mile for Routes 3 and 23.

As discussed in Section 2.2.5.3, NWI maps are based on topography and interpretation of infrared satellite data and color aerial photographs. As such, NWI data is useful for planning and comparative analysis purposes, but should not be relied upon for determining USACE jurisdiction. NWI wetland types identified within the study area include palustrine emergent, forested/shrub, and ponds, and are typically

associated with streams, draws, drainages, and depressional areas. ROW for 20 of the primary alternative routes does not cross any length of mapped NWI wetlands. Routes 13, 14, 15, 16 and 25 cross approximately 0.02 mile of mapped NWI wetlands.

#### **4.1.3.2 Ground Water**

The construction, operation, and maintenance of the Proposed Project is not anticipated to adversely affect groundwater resources within the study area, though potential fuel and/or chemical spills during the construction process could potentially impact both surface water and groundwater resources. Thus, standard operating procedures and spill response specifications relating to petroleum product storage, refueling, and maintenance activities of equipment are provided as a component of an applicable SWPPP to avoid and minimize potential contamination to water resources. LCRA TSC and AEP Texas will take all necessary and available precautions to avoid and minimize the occurrence of such spills, and any remedial and disposal activities associated with any accidental spills will be in accordance with state and federal regulations.

#### **4.1.3.3 Floodplains**

Based on FEMA FIRMs, 100-year floodplain data was not available for the entire study area, but floodplain areas may occur within low lying streams, draws, and associated depressional areas. Structures may be located within these floodplains; however, engineering considerations and proper structure placement should alleviate the potential for adverse impacts of floodwater flow by minimizing impedance. Construction of the Proposed Project will not have any significant impacts on the overall function of a floodplain, nor adversely affect adjacent or downstream properties. If structures are to be located within a floodplain, LCRA TSC or AEP Texas, as applicable will coordinate with the appropriate county floodplain administrators.

### **4.1.4 Impacts on Ecosystems**

#### **4.1.4.1 Vegetation**

Potential impacts to native vegetation will result from clearing the new ROW of woody vegetation and/or clearing herbaceous vegetation. These activities facilitate access for transmission structure construction, line stringing, and maintenance activities. Vegetation removal will be performed in accordance with natural and cultural resource regulations and in a manner that will diminish marring and scarring of the landscape while ensuring that the line can be constructed, operated, and maintained safely and in accordance with state and federal regulations governing utility construction. Prior to construction, removal of woody vegetation within new ROW may be required within areas considered to be upland



forested, bottomland/riparian, and woody wetland areas. Mowing and/or shredding of herbaceous vegetation may be required within pasture/rangeland. Future ROW maintenance activities may include periodic mowing and/or herbicide applications to maintain the herbaceous vegetation layer within the ROW.

Clearing trees and shrubs from woodland areas would generate an additional degree of habitat fragmentation. The degree of new habitat fragmentation is typically reduced when a route uses an existing transmission line ROW or parallels an existing linear feature such as a transmission line, roadway, or fence line/property line. During the route development process, consideration was given to minimizing impacts to riparian areas and to maximizing the length of the routes paralleling existing transmission line ROW and other linear corridors to reduce fragmentation of habitat.

Impacts to vegetation would be limited to what is associated with the construction, operation, and maintenance of the Proposed Project. ROW clearing activities will be completed with minimal vegetation impacts and the existing groundcover will be maintained when practical. The most common land use types within the study area are pasture/rangeland. While the TPWD (see Appendix A) recommends implementing practices to prevent establishment of invasive plant species and sustain native species, the native vegetation within these areas has likely been previously modified. LCRA TSC's and AEP Texas' vegetation management activities are described in Section 1.0 of this document.

All of the primary alternative routes parallel existing linear corridors for some portion of their lengths (including property boundaries) that minimize potential impacts to the vegetation and minimize habitat fragmentation (see Table 4-1).

The study area is primarily comprised of upland brushland vegetation and pasture/rangeland. Bottomland/riparian woodlands are typically limited to narrow corridors near streams and draws. Some irrigated croplands exist, scattered within the study area. Temporary impacts to row crop species will be the greatest during the growing season and these can be minimized with the seasonal timing of construction activities. Permanent impacts (loss of production areas) will be limited to the footprint of the transmission structures since these areas are inaccessible with large farming or cultivating equipment. Commercially important vegetation species within the study area are primarily agriculturally oriented, including pecan orchards, hay, and row crops. Hay production from improved and unimproved pastures exists in portions of the study area, primarily in support of cattle production. Minimal impacts to hay-production may occur during the construction phase of the project. Primary alternative route lengths within cropland areas range

from approximately 0.0 (zero) mile for Routes 3, 6, 7, 10, 11, 12, 17, 19, 20, 21, 22, and 23, to approximately 1.6 miles for Routes 1 and 24. Primary alternative route lengths proposed within pasture/rangeland areas varies from approximately 66.3 miles for Route 2, to approximately 84.7 miles for Route 18. None of the ROW for any primary alternative route crosses areas traversed by mobile irrigation systems.

Upland woodland/brushland vegetation will also be impacted where clearing is required for the ROW. The length of ROW across upland woodland/brushland vegetation ranges from approximately 5.1 miles for Route 3, to approximately 20.1 miles for Route 8. The length of ROW across bottomland/riparian woodlands ranges from approximately 0.00 (zero) mile for Routes 13 and 14, to approximately 0.85 mile for Route 21.

A summary of the TPWD recommendations (see Appendix A) includes maximizing the use of existing electrical transmission facilities, and where new ROW construction is required, maximizing paralleling existing linear corridors to minimize potential impacts to undisturbed native habitats. Recommendations also included minimizing the clearing of sensitive/native vegetation and avoidance of conservation easements. These recommendations were considered and implemented where practical during the routing process.

#### **4.1.4.2 Wildlife**

The primary impact of construction activities for the Proposed Project on terrestrial wildlife species will be associated with temporary disturbances associated with construction activities and with removal of vegetation (habitat modification/fragmentation). Increased noise and equipment movement during construction may temporarily displace mobile wildlife species from the immediate workspace area. These impacts will be short-term and normal wildlife movements are expected to resume after construction is completed. Potential long-term impacts include those resulting from habitat modifications and fragmentation. Most of the vegetation types encountered along the primary alternative routes are associated with upland woodland/brushland, bottomland/riparian woodland/brushland, or pasture/rangeland. Generally, native habitats in the study area have previously been modified to a high degree due to overgrazing development, or to support various land uses. Remnant habitats often serve as shelter and/or movement corridors for many species. By paralleling existing linear corridors such as transmission lines, roadways, or fence lines, the degree of impact to wildlife and habitat fragmentation is reduced.

Construction activities may also impact small, immobile, or fossorial (living underground) animal species through accidental impacts or the alteration of local habitats. Impacts to these species may occur due to equipment or vehicular movement on the ROW by direct impact or due to the compaction of the soil if the species is fossorial. Potential impacts of this type are not typically considered significant and are not likely to have an adverse effect on any species population dynamics within the study area.

*If ROW clearing occurs during the nesting season, potential impacts could occur within the ROW area related to potential take of migratory bird eggs and/or nestlings. Increases in noise and activity levels during construction could also potentially disturb breeding or other activities of species nesting in areas immediately adjacent to the ROW. The TPWD recommends using practices to avoid harassment and harm to migratory birds during vegetation removal and that ground-disturbing activities be done outside the nesting season (see Appendix A).*

Structure design and other mitigation measures can be implemented to minimize the risk for electrocution and/or collisions of birds with overhead powerline facilities. The danger of electrocution to birds as a result of the Proposed Project will be insignificant since the distance between conductors, from conductor to structure, and from conductor to ground wire for the proposed 345-kV transmission line is greater than the wingspan of any bird in the area. The structures and wires of the line could be a collision hazard to birds in flight. Normally, migratory birds fly at altitudes exceeding the tower structure heights proposed for the project and would be at risk only during periods of migratory fallout (inclement weather and/or high opposing direction winds forcing them to lower altitudes).

The most likely potential permanent impact to wildlife will result from the clearing of upland and bottomland (including wetlands) woodland/brushland habitats. Since a large percentage of the native vegetation in the study area has previously been converted to pastureland/rangeland and cropland uses, the remnant woodland vegetation often serves as a habitat and/or a movement corridor for many species. By utilizing existing ROWs and/or paralleling existing linear features to the greatest reasonable extent, the potential impacts to wildlife and habitat fragmentation are minimized.

Potential impacts to aquatic systems will include effects of erosion, siltation, and sedimentation. Vegetation clearing of the ROW may result in increased suspended solids entering surface waters traversed by the transmission line. Increases in suspended solids may adversely affect aquatic organisms that require relatively clear water for foraging and/or reproduction. Implementation of an SWPPP and installation of erosion control devices would minimize these potential impacts. Physical aquatic habitat

loss or alteration could result wherever riparian vegetation is removed and at temporary crossings for access roads. Increased levels of siltation or sedimentation may also potentially impact downstream areas primarily affecting filter feeding benthic and other aquatic invertebrates. No significant adverse impacts are anticipated to any aquatic habitats crossed or adjacent to the ROW for any of the primary alternative routes. The procedures of LCRA TSC and AEP Texas' to minimize sediment runoff are presented in Section 1.0 of this document.

Construction of the proposed transmission line is not expected to have significant impacts on commercially or recreationally important wildlife species occurring within the study area. Wildlife may temporarily be displaced from areas of activity during the construction phase but should return to normal movement patterns during the operation phase.

#### **4.1.4.3 Threatened and Endangered Species**

To determine potential impacts to threatened or endangered species, POWER reviewed several sources of information. Known element occurrence data for the study area was obtained from the TXNDD and comments were received from TPWD (Appendix A). TPWD current county listings for federal- and state-listed threatened and endangered species, USFWS IPaC review, and USFWS designated Critical Habitat locations were included in the review. POWER also utilized several published sources to review life histories and habitat requirements of listed species, as previously discussed in Section 2.2.5.

USFWS (2018b) and TPWD (2018c) data identified two federally listed plant species within the study area: Lloyd's Mariposa cactus and Pecos sunflower. Designated Critical Habitat for these species was previously identified along Leon Creek. None of the alternative routes cross designated Critical Habitat for any federally listed plant species. TXNDD (2018) data identified six occurrences of the Pecos sunflower within the study area and all routes, except Routes 20 and 21, cross at least one element of occurrence polygon for the Pecos sunflower; but, because these are large buffered polygons (the largest of these is approximately 10 miles across) and do not give an accurate estimate of potential habitat, the route lengths across these polygons were not included in the evaluation criteria in Table 4-2. Each of these plant species may occur within the study area where suitable habitat is present. Federally listed plants are not typically protected under the ESA unless on federal lands or if the project has a federal nexus. After the PUC approves a route, field surveys may be performed, if necessary, to identify potential suitable habitat for listed plant species and determine the need for any additional species-specific surveys. With the development of an avoidance and impact minimization plan, the potential for any of the primary alternative routes to adversely affect federally-listed plant species is not anticipated to be significant.

USFWS designated Critical Habitat was identified within the study area for the Diamond tryonia, Gonzales tryonia, Leon Springs pupfish, Pecos amphipod, and Pecos assiminea snail. None the alternative routes cross designated Critical Habitat for any federally listed species (USFWS 2018b). All designated Critical Habitat occurs along Leon Creek and Diamond Y Spring, north of the City of Fort Stockton. All of these are aquatic or semi-aquatic species that occur in these rare perennial spring fed ecosystems. Additional state and federal listed aquatic species include the Texas hornshell, Pecos pupfish, and Proserpine shiner. Erosion control devices would be implemented in accordance with an SWPPP to reduce the potential for sedimentation outside of the ROW. Proper inspection and maintenance of these erosion control devices will minimize the potential for erosion of exposed soils on the ROW and deposition of sediments into surface waters and would minimize impacts to aquatic ecosystems and aquatic species. With the development of an avoidance and impact minimization plan, the potential for any of the primary alternative routes to adversely affect listed aquatic species is not anticipated to be significant.

Review of the TXNDD (2018) data indicates Routes 2, 5, 6, 7, 11, and 17 cross approximately 0.01 mile of potential habitat for the Leon Springs pupfish (federally endangered species). Routes 1, 4, 8, 9, and 24 also cross a TXNDD (2018) occurrence polygon for the Leon Springs pupfish, but because it was a large buffered polygon and did not give an accurate estimate of potential habitat, the route length across this polygon was not included in the evaluation criteria in Table 4-1. If any potential habitat for federally listed threatened or endangered species is identified during a field survey of the PUC approved route, either LCRA TSC or AEP Texas (depending on the location) will further coordinate with the USFWS and TPWD to determine avoidance or mitigation strategies.

State and federally listed avian migrant species potentially occurring within the study area include the northern aplomado falcon, peregrine falcon, interior least tern, piping plover, and red knot. These species are not anticipated to occur within the study area, except as rare non-breeding migrants. The seasonal habitats for these avian species may be spanned or avoided entirely; thus, the Proposed Project is not anticipated to have any adverse impacts to these species.

State and federally listed species such as the western yellow-billed cuckoo, Mexican spotted owl, reddish egret, Comanche Springs pupfish, gray wolf, and black-footed ferret are not anticipated to occur within the study area due to a lack of suitable habitat, extirpation, or the study area is not within the current known range of the species.

Additional state listed species such as the zone-tailed hawk, black-capped vireo, black bear, Texas horned lizard, and Trans-Pecos black-headed snake may occur within the study area where or if suitable habitat is available. The Texas horned lizard and Trans-Pecos black-headed snake may be subject to minor temporary disturbance during construction activities if the species is present. If this species is observed during construction activities, it will be allowed to leave the ROW on its own accord or be relocated by a TPWD-permitted individual. The construction of a transmission line does not include activities associated with collecting, hooking, hunting, netting, shooting, or snaring by any means or device and does not include an attempt to conduct such activities. Therefore, “take” of state-listed species as defined in Section 1.01(5) of the Texas Parks and Wildlife Code, is not anticipated as a result of the Proposed Project.

#### **4.1.4.4 Summary of Natural Resources Impacts**

Biological criteria primarily considered for the Proposed Project included the length of ROW through upland woodland/brushlands, riparian/bottomland woodland, potential wetlands, and known and potential habitat of federally-listed endangered or threatened species. Length of ROW parallel to streams or rivers, length of ROW across 100-year floodplains, and number of stream crossings was also evaluated and measured. Other ecological evaluation criteria were considered, but their quantitative differences were insignificant or had a zero value. The overall length of each route and length of each route utilizing existing transmission line ROW or paralleling other compatible ROW as a means to minimize fragmentation and clearing, were also considered. No significant impacts to biological resources are anticipated for any of the primary alternative routes.

- Route 3 has the shortest length of ROW through upland woodland/brushland, at approximately 5.1 miles.
- Routes 13 and 14 have the shortest length of ROW through bottomland/riparian woodlands, at approximately 0.0 (zero) mile each.
- Routes 3, 6, 7, 10, 11, 12, 17, 19, 20, 21, 22, and 23 have the shortest length of ROW across croplands, at 0.0 (zero) mile each.
- Route 2 has the shortest length of ROW across pasture/rangeland, at approximately 66.3 miles.
- Routes 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 17, 18, 19, 20, 21, 22, 23, and 24 have the shortest length of ROW through NWI mapped wetlands, at approximately 0.0 (zero) mile each.
- Routes 1, 3, 4, 8, 9, 10, 12, 13, 14, 15, 16, 18, 19, 20, 21, 22, 23, 24, and 25 have the least area of ROW across known habitat of federally listed endangered or threatened species; at approximately 0.0 (zero) mile each.

- No routes have any length of ROW across open water.
- Route 7 has the least number of stream crossings with 13 crossings.
- No routes cross any rivers.
- Routes 2, 4, 5, 6, 7, 11, 12, 14, and 22 have the least length of ROW parallel to streams or rivers, at approximately 0.2 mile.

## **4.2 Human Resource Impacts**

### **4.2.1 Socioeconomic Impacts**

LCRA TSC and AEP Texas use their own employees or contractors during the clearing and construction phase of transmission line projects. However, a portion of the project costs will find their way into the local economy through purchases such as fuel, food, lodging, and possibly building materials. ROW easement payments will be made to individuals whose private property is crossed by the transmission line based on the appraised land value. LCRA TSC and AEP Texas are also required to pay state and local sales tax on purchases and are subject to paying local property tax on land or improvements. None of the land associated with ROW acquired for the transmission line will be taken off the tax rolls. The cost of permitting, designing, and constructing the line will be paid for through revenue generated by rates for electrical transmission service. The rates for LCRA TSC's and AEP Texas' electric transmission service are regulated by the PUC.

Potential long-term economic benefits to the community resulting from construction of the Proposed Project are based on the requirement that electric utilities provide an adequate and reliable level of power throughout their service areas. Economic growth and development rely heavily on adequate public utilities, including a reliable electrical power supply. Without this basic infrastructure, a community's potential for economic growth is constrained.

### **4.2.2 Impacts on Community Values**

The term "community values" is included as a factor for the consideration of transmission line certification under Section 37.056(c)(4) of the Texas Utilities Code. Impacts on community values can be classified into two types: 1) direct effects, or those effects which would occur if the location and construction of a transmission line results in the removal of, or loss of public access to, a valued resource; and 2) indirect effects, or those effects which would result from a loss in the enjoyment or use of a resource due to the characteristics (primarily aesthetic) of the proposed line, structures, or ROW. Impacts on community values, whether direct or indirect, can be more accurately gauged as they affect

recreational areas or resources and the visual environment of an area (aesthetics). Impacts in these areas are discussed in detail in Sections 4.2.5 and 4.2.6 of this report.

#### **4.2.3 Impacts on Land Use**

The magnitude of potential land use impacts resulting from the construction of a transmission line are determined by the amount of land burdened by the actual ROW and by the compatibility of the transmission line ROW with adjacent land uses. During construction, temporary impacts to land uses within the ROW could occur due to the movement of workers, equipment, and materials through the area. Construction noise and dust, as well as temporary disruptions of traffic flow, may also temporarily affect residents and businesses in the area immediately adjacent to the ROW. Coordination between LCRA TSC and AEP Texas, their contractors, and landowners regarding ROW access and construction scheduling should minimize these disruptions. The primary criteria considered to compare potential land use impacts for this project include proximity to habitable structures, length utilizing or parallel to existing ROW, length parallel to apparent property lines, and overall route length. An analysis of the existing land use within and adjacent to the proposed ROW is required to evaluate the potential impacts.

##### **4.2.3.1 Habitable Structures**

One of the most important measures of potential land use impacts is the number of habitable structures located in the vicinity of each route. Habitable structure information for each primary alternative route is shown in Tables 4-3 through 4-27 (see Appendix C). POWER determined the number and distance to habitable structures within 500 feet of the centerline of each route through evaluation during field reconnaissance and from measurements obtained using GIS and aerial photographs.

Some of the primary alternative routes have habitable structures located within 500 feet of their centerlines. Routes 10, 12, 13, 18, 19, 20, 21, and 22 have no habitable structures located within 500 feet of their centerlines. Route 23 has the most habitable structures located within 500 feet of its centerline, at 14. The number of habitable structures located within 500 feet of each primary alternative route centerline is presented in Table 4-1. All known habitable structure locations within 500 feet are shown on Figure 4-1 (see Appendix E).

##### **4.2.3.2 Utilizing/Paralleling Existing Transmission Line ROW**

The least impact to land use generally results from locating new lines within or parallel to an existing transmission line ROW. 16 TAC § 25.101(b)(3)(B) states that (among others) the following factors shall be considered in the selection of the alternative routes:



- whether the routes utilize existing compatible ROW, including the use of vacant positions on existing multiple-circuit transmission lines;
- whether the routes parallel existing compatible ROW; and
- whether the routes parallel property lines or other natural or cultural features.

#### **Utilizing Existing Transmission Line ROWs**

None of the primary alternative routes utilize existing transmission line ROW. The existing 138-kV and 69-kV transmission lines do not have ROW sufficient for the Proposed Project (150 feet). Vacant positions on existing multiple-circuit transmission lines are not available within the study area.

#### **Paralleling Existing Transmission Line ROWs**

POWER identified several existing transmission line corridors within the study area that the Proposed Project could potentially parallel in a reliable manner. The total alternative route lengths parallel to existing transmission line ROW range from approximately 0.0 (zero) mile each for Routes 15 and 20, to approximately 54.4 miles for Route 23. The lengths parallel and adjacent to existing transmission line ROW for each of the primary alternative routes are presented in Table 4-1. In addition, Table 4-1 identifies lengths parallel and adjacent to existing 69-kV, 138-kV and 345-kV transmission lines. The data associated with paralleling 138-kV transmission lines includes an existing 69-kV transmission line that is being upgraded for operation at 138-kV prior to the completion of the Proposed Project.

#### **4.2.3.3 Paralleling Other Existing Compatible ROW**

Paralleling other existing compatible ROW (such as roadways, railways, etc.) is also generally considered to be a favorable routing criterion, one that usually results in fewer impacts compared to establishing new ROW. POWER identified existing compatible ROWs as potential paralleling opportunities in accordance with the provisions of 16 TAC § 25.101(b)(3)(B). However, POWER deviated from paralleling some compatible ROWs to avoid known constraints (e.g., existing habitable structures, oil and gas facilities, water wells, caves, waterways, etc.).

All of the primary alternative routes parallel other existing ROW to the extent feasible. The routes with lengths paralleling other existing ROW range from approximately 1.7 miles for Route 23, to approximately 27.8 miles for Route 15. The lengths parallel and adjacent to other existing ROW for each of the primary alternative routes are presented in Table 4-1.

### **Roadway ROWs**

Most highways and other roads are coincident with property lines. Thus, in many cases, when routes parallel roads, they are also parallel and adjacent to property lines. POWER evaluated paralleling IH 10, US Hwy 67, US Hwy 285, US Hwy 385, SH 18, FM 11, FM 1053, FM 1776, FM 2023, FM 2037, and numerous other local roads. Roadways are oriented in a north to south as well as east to west direction and presented acceptable paralleling opportunities where practicable and feasible.

### **Railroad ROWs**

One Atchison Topeka and Santa Fe Railroad and one abandoned railroad were identified within the central portion of the study area. The abandoned railroad parallels a portion of Texas Gulf Plant Road and presented an acceptable paralleling opportunity.

#### **4.2.3.4 Paralleling Property Lines**

Paralleling property lines is a favorable routing criterion set out in 16 TAC § 25.101(b)(3)(B). Paralleling property lines or fence lines may minimize the potential for disruption to agricultural activities and may create less of a constraint for future development of a tract of land. LCRA TSC and AEP Texas provided POWER with updated parcel line data that was obtained from the Pecos County Appraisal District in January 2018. There can be differences between property lines and parcel lines depending on how the information is organized at the county appraisal district.

In February 2018, LCRA TSC grouped the updated appraisal district parcel data where possible in an effort to identify potential aggregated ownership. Where there are contiguous parcels in apparent common ownership, only paralleling of the outside boundary of the parcels was tabulated. Paralleling interior parcel lines within a group of two or more contiguous parcels was not tabulated as parallel to apparent property lines. Each route was developed to parallel property lines where feasible, while also considering other important factors such as engineering constraints and costs.

The length of primary alternative routes that parallel apparent property lines range from approximately 2.0 miles for Route 23, to approximately 43.7 miles for Routes 20 and 21. The lengths parallel and adjacent to apparent property boundaries for each of the primary alternative routes are presented in Table 4-1.

#### **4.2.3.5 Pipelines**

Pipelines are not considered compatible ROW and were avoided to the extent possible. POWER reviewed aerial photography, the RRC website, and obtained Penwell data from LCRA TSC to identify pipeline ROWs located within the study area. Verification was conducted during field reconnaissance where possible.

The length of primary alternative routes that are adjacent and parallel to petrochemical pipelines six inches in diameter or greater range from approximately 0.0 (zero) mile each for Routes 2, 3, 5, 6, 7, and 23, to approximately 4.5 miles for Route 21. The lengths parallel and adjacent to large petrochemical pipelines for each of the primary alternative routes are presented in Table 4-1.

#### **4.2.3.6 Overall Length of Routes**

The overall length of a route can be an indicator of the relative level of potential land use and environmental impacts. Potential impacts to land use are typically minimized with routes that have shorter lengths, as less land surface area is required for the ROW. The total lengths of the routes range from 67.8 miles for Route 2, to 91.8 miles for Route 21. The differences in route lengths reflect the direct or indirect pathway of each route between the project endpoints. The length of the routes may also reflect the effort to parallel existing transmission lines, other existing linear features like highways, apparent property boundaries, and the geographic diversity of the primary alternative routes. The approximate lengths for each of the primary alternative routes are presented in Table 4-1.

Typically, a more representative account for the consideration of whether new transmission line routes are parallel and adjacent to existing compatible ROWs, apparent property lines, or other natural or cultural features is demonstrated with the percentage of each total route length parallel to any of these features. These percentages can be calculated for each primary alternative route by adding up the total length parallel and adjacent to existing transmission line ROW, other existing compatible ROW, and apparent property lines and then dividing the result by the total length of the primary alternative route. All of the primary alternative routes parallel existing linear features for some portion of their lengths. The percentage of the primary alternative routes paralleling existing linear features ranges from a high of 86 percent for Route 24, to a low of 57 percent for Route 18. The percent parallel to existing linear features for each of the primary alternative routes are presented in Table 4-1.

#### **4.2.4 Impacts on Transportation/Aviation**

##### **Transportation**

Potential impacts to transportation may include temporary disruption of traffic and conflicts with proposed roadway and utility improvements. Traffic disruptions would include those associated with the movement of construction equipment and materials to and from the ROW and increased traffic flow and periodic congestion during the construction phase of the Proposed Project. These impacts are typically considered minor, temporary, and short-term.

All the primary alternative routes cross one or more IHs, US Hwys, SHs, or FM roads. The number of IH, US, or SH road crossings range from three each for 13 of the primary alternative routes, to eight for Route 19. The number of FM road crossings range from one for Route 19, to five each for eight of the primary alternative routes. The number of IHs, US Hwys, SHs, and FM road crossings for each of the primary alternative routes are presented in Table 4-1.

##### **Aviation**

According to FAA regulations (Title 14 CFR Part 77), the construction of a transmission line requires FAA notification if structure heights exceed the height of an imaginary surface extending outward and upward at a slope of 100:1 for a horizontal distance of 20,000 feet from the nearest point of the nearest runway of an FAA registered public or military airport having at least one runway longer than 3,200 feet. The FAA also requires notification if the tower structure height exceeds a 50:1 slope for a horizontal distance of 10,000 feet from the nearest runway of an FAA registered public or military airport where no runway is longer than 3,200 feet in length and if the tower structure height exceeds a 25:1 slope for a horizontal distance of 5,000 feet for FAA registered heliports.

The review of federal and state aviation/airport maps and databases, aerial photo interpretation, TxDOT Division of Aviation information, and field reconnaissance were used to identify airports and airstrips located within the study area and within 20,000 feet of the primary alternative routes. There is one FAA registered public airport with a runway longer than 3,200 feet identified within 20,000 feet of seven of the primary alternative routes, Fort Stockton-Pecos County Airport. There are no FAA registered public or military airports with runways shorter than 3,200 feet identified within 10,000 feet of the routes. No FAA registered public heliports were identified within 5,000 feet of the primary alternative routes.

The number of private airports identified within 10,000 feet of the primary alternative routes range from 0 (zero) each for 12 of the primary alternative routes, to two each for Routes 2 and 11. The number of private airports for each of the primary alternative routes is presented in Table 4-1.

The distance for each airport from the nearest route segment was measured using GIS and aerial photograph interpretation (see Table 4-28). All known airport locations are shown on Figures 3-14a, b, c and 4-1 (see Appendix E).

TABLE 4-28 AIRPORT FACILITIES

FIGURE 4-1 MAP ID	AIRSTRIP	NEAREST ROUTE SEGMENT	PRIMARY ALTERNATIVE ROUTES	DISTANCE FROM NEAREST ROUTE SEGMENT (FT)*	RUNWAY LENGTH (FT) <sup>1</sup>	EXCEEDS THE SLOPE <sup>1,2</sup>
100	Fort Stockton-Pecos County Airport (FAA Public)	R1	3, 10, 12, 18, 19, 22, 23	7,412	4,400	Yes
101	Private Airstrip 1 (Private)	H	2, 3, 4, 11, 12, 14	2,077	NA	NA
102	Private Airstrip 2 (Private)	N1	18, 20, 21	1,229	NA	NA
103	Private Airstrip 3 (Private)	Q	2, 5, 6, 7, 11, 17	1,119	NA	NA

\*Source: <sup>1</sup>FAA 2018a, <sup>2</sup>POWER Aerial Photo, and USGS Interpretation.

<sup>2</sup>POWER used aerial photo and USGS interpretation considering elevation information obtained from USGS topographic maps and a typical transmission structure height of 185 feet.

In addition to the previously discussed airport facilities and runways and as presented earlier in Section 2.4.6, an FAA regulated VORTAC facility was identified within the study area. After review of the potential impacts to the VORTAC facility, POWER, LCRA TSC, and AEP Texas considered structure location and ground elevation to avoid potential impacts to operation of the VORTAC facility. No adverse impacts are anticipated to the VORTAC from any of the primary alternative routes. Once a route is approved by the Commission, LCRA TSC and AEP Texas will coordinate with the FAA if required for the approved route.

#### Communication

No known AM radio transmitters were identified within the study area or within 10,000 feet of the primary alternative routes. The number of FM radio transmitters, microwave towers, and other electronic communications towers located within 2,000 feet of any of the primary alternative routes range from 0 (zero) each for Routes 6, 21, and 25, to three for Routes 1, 5, 7, 10, 12, and 23. The number of FM radio transmitters, microwave towers, and other electronic communications towers for each of the primary alternative routes is presented in Table 4-1.

The distance of each communication tower from the nearest route segment was measured using GIS and aerial photograph interpretation (see Table 4-29). None of the routes are anticipated to have a significant impact on communication operations in the area. All known electronic communication facility locations are shown on Figures 3-14a, b, c and 4-1 (see Appendix E).

**TABLE 4-29 ELECTRONIC COMMUNICATION FACILITIES**

FIGURE 4-1 MAP ID	TOWER TYPE	NEAREST ROUTE SEGMENT	PRIMARY ALTERNATIVE ROUTES	DISTANCE FROM NEAREST ROUTE SEGMENT (FT)*
301	Unidentified Communication Tower	B	1, 5, 7, 8, 12, 23	257
302	SBA Structures, LLC (ARS 1246767)	F1	10, 13, 15, 16, 17, 19	1,253
303	Unidentified Communication Tower	R	1, 4, 9, 24	692
304	Unidentified Communication Tower	Q	2, 5, 11	1,141
305	WWC Texas RAS LLC (ASR 1291434)	W	1, 2, 4, 5, 24	1,125
306	WWC Texas RSA LLC (ASR 1243193)	W1	3, 7, 10, 12, 18, 22, 23	368
307	SBA Structures, LLC (ARS 1246765)	J2	3, 7, 10, 12, 13, 14, 15, 18, 20, 22, 23	642

\*Source: POWER Aerial Photo, USGS Interpretation, and FCC 2018.

## 4.2.5 Impacts on Parks and Recreation

Potential impacts to recreation include the disruption or preemption of recreational activities. As previously mentioned, the study area contains recreation areas that consist of several local and neighborhood parks, school playgrounds, and hunting or fishing areas.

None of the primary alternative routes cross parks or recreational areas. The number of additional parks or recreational areas within 1,000 feet of the primary alternative routes ranges from 0 (zero) each for 11 of the alternative routes, to three each for Routes 10, 12, 13, 14, and 15. The number of additional parks or recreational areas within 1,000 feet for each of the primary alternative routes is presented in Table 4-1.

The distance of each park or recreation area from the nearest route segment was measured using GIS and aerial photography interpretation (see Table 4-30). No significant impacts to the use of the parks and recreation facilities located within the study area are anticipated from any of the alternative routes. Also, no adverse impacts are anticipated for any fishing or hunting areas from any of the primary alternative routes. All park or recreational area locations are shown on Figures 3-14a, b, c and 4-1 (see Appendix E).

TABLE 4-30 PARKS AND RECREATION AREAS

FIGURE 4-1 MAP ID	PARKS AND RECREATION AREAS (WITH OWNERSHIP)	NEAREST ROUTE SEGMENT	PRIMARY ALTERNATIVE ROUTES	DISTANCE FROM NEAREST ROUTE SEGMENT (FEET)*
200	Roadside Park (University of Texas)	G1	12, 14	196
201	Interstate 10 Picnic Area (Federal)	F1	10, 13, 15, 16, 17, 19	330
202	Fourteen Mile Park (State of Texas)	H1	10, 12, 13, 14, 15, 16, 17, 19	317
203	Interstate 10 Rest Area-West Bound (Federal)	J2	3, 7, 10, 12, 13, 14, 22, 23	629
204	Interstate 10 Rest Area-East Bound (Federal)	Q2	15, 18, 20	276

\*Source: POWER Aerial Photo and USGS interpretation

#### 4.2.6 Impacts on Aesthetics

Aesthetic impacts or impacts to visual resources exist when the ROW, lines, or structures of a transmission line create an intrusion into, or substantially alter, the character of the existing view. The significance of the impact is directly related to the quality of the view in natural scenic areas, the importance of the existing setting in the use or enjoyment of an area, and in valued community resources in recreational areas.

Potential visibility impacts were evaluated by tabulating the linear feet of each route that would potentially create a new or additional impact to potential sensitive views. The lengths of each route within the foreground visual zone of IHs, US Hwys, SHs, FM roads, and parks or recreational areas (within one-half mile with unobstructed views) were tabulated.

Construction of the proposed 345-kV transmission line could have both temporary and permanent aesthetic effects. Temporary impacts would include views of the actual assembly and erection of the transmission structures. Where wooded areas are cleared, the brush and wood debris could have an additional negative temporary impact on the local visual environment. Permanent impacts from the project would involve the views of the structures and lines. New visual impacts would be minimized by constructing the new transmission line parallel to existing transmission lines.

Route 10 has the longest length within the foreground visual zone of IHs, US Hwys, and SHs, approximately 47.6 miles, while Routes 1, 6, and 24 have the shortest length, approximately 4.0 miles each. The greatest length within the foreground visual zone of FM roads is associated with Route 6,

approximately 12.9 miles, while Route 12 has the shortest length, approximately 1.3 miles. Routes 10, 13 and 15 have the longest length within the foreground visual zone of parks or recreational areas, approximately 4.3 miles each, while 11 of the alternative routes have the shortest length, approximately 0.0 (zero) mile each. The lengths of each of the primary alternative routes within the foreground visual zone of IHs, US Hwys, SHs, FM roads, and parks or recreational areas are presented in Table 4-1.

#### **4.2.7 Summary of Human Resource Impacts**

Land use criteria that were primarily considered for the Proposed Project were the number of habitable structures located within 500 feet of each primary alternative route centerline, the overall length of the primary alternative route, and the percentage of the route that parallels existing compatible ROWs (roadways, railways, etc.).

- Routes 10, 12, 13, 18, 19, 20, 21, and 22 have the fewest number of habitable structures located within 500 feet of their centerlines, with 0 (zero) each; Routes 4, 14, 15, 16, and 25 have the second fewest number of habitable structures, with two each, and Routes 1, 2, 8, 9, 11, and 24 have five habitable structures each located within 500 feet of their centerlines. Route 23 has the highest number of habitable structures within 500 feet at 14.
- Route 2 has the shortest overall length, approximately 67.8 miles, Route 3 is slightly longer at approximately 69.4 miles, and Route 1 is approximately 70.7 miles. The longest route is Route 21 at approximately 91.8 miles.
- Route 24 has the highest percent route length that is parallel and adjacent to existing transmission line ROW, parallel and adjacent to other existing compatible ROW (roadways, etc.), and parallel and adjacent to apparent property lines, with approximately 86 percent. Route 1 parallels existing compatible ROW for approximately 84 percent of its length and Route 9 parallels existing compatible ROW for approximately 82 percent of its length. Route 18 has the least percent route length that is parallel to existing compatible ROW at approximately 57 percent.

### **4.3 Cultural Resources Impacts**

The methodology for identifying, evaluating, and mitigating impacts to cultural resources has been established for federal projects and/or permitting actions, primarily through the National Historic Preservation Act. Texas regulations use similar methods when considering cultural resources affected by non-federal undertakings. This process requires identifying significant (i.e., National or State Register-listed or eligible) cultural resources potentially affected by an action, determining the potential impacts of that action, and implementing measures to avoid, minimize, or mitigate those impacts.



#### **4.3.1 Direct Impacts**

Construction activities associated with any proposed project can adversely impact cultural resources when they alter the integrity of the characteristics that contribute to a property's significance as defined by the standards of the NRHP or Texas registries. These characteristics may include location, design, setting, materials, workmanship, feeling, and association. Activities associated with the construction, operation, and maintenance of transmission lines could directly or indirectly impact significant cultural resources. For example, earth moving activities during construction typically have the highest potential to directly impact cultural resources by either destruction of all or part of a property or alteration of the setting. Direct visual impacts may occur when transmission structures are built near significant cultural resources such as intact segments of historical trails and historical buildings that derive at least part of their significance from an unaltered historical setting.

#### **4.3.2 Mitigation**

The preferred form of mitigation for direct and indirect impacts to cultural resources is avoidance during the detailed design phase, which occurs after a route has been approved by the PUC. Additional mitigation measures for direct impacts may include implementing a program for data recovery excavations if an archeological site cannot be avoided. Reductions in visual impacts to significant buildings and landscapes may also be accomplished by using berms or vegetation screens. Because a cultural resource survey has not been conducted for any of the routes, cultural resources may exist within the transmission ROW that have not been identified or evaluated, and the potential of impacting undiscovered resources exists.

Because the routes have not been systematically surveyed for cultural resources, HPAs for prehistoric cultural resources were identified along the routes. Based on a review of the Fort Stockton Sheet in the BEG Geologic Atlas of Texas (BEG 1994), topographic quadrangles depicting the study area, soil survey data, and the results of archeological projects within the study area, HPAs for prehistoric resources include secondary terraces along major rivers and streams, intact Holocene-era sediments, broad floodplains, areas that may harbor chert lithic resources, and on the edge of terraces above floodplains.

HPAs for prehistoric and historic resources were mapped using GIS, and the length of each route and segment across these areas was tabulated (Tables 4-1 and 4-2).

### 4.3.3 Summary of Cultural Resource Impacts

The distance from the centerline for each recorded archeological site, NRHP property, and cemetery located within 1,000 feet of the nearest route was measured using GIS and aerial photography interpretation. Thirty-seven recorded archeological sites and one cemetery are located within 1,000 feet of the primary alternative route centerlines (Table 4-31). Ten of these sites are crossed by the primary alternative route ROWs. The cultural resources recorded within 1,000 feet of the primary alternative routes are discussed below.

The Girvin Cemetery is located within 1,000 feet of eight of the alternative route centerlines. The cemetery has not been designated a Historic Texas Cemetery and contains 44 graves, dating to as early as 1917 (Find a Grave 2018; Cemeteries of Texas 2018). The Girvin Cemetery is 126 feet from the centerlines of Routes 1, 5, 6, 7, 8, 9, 23, and 24. No impacts to the cemetery are expected, and it is anticipated that any potential impacts will be mitigated through routing and/or engineering design and construction measures.

The 37 recorded archeological sites located within 1,000 feet of the primary alternative route centerlines are briefly described in Table 2-16 and listed in Table 4-31 along with their distances from the route centerlines. Thirty-two of the sites are recorded as prehistoric sites, three are recorded as historic sites, and two of the sites have both prehistoric and historic components. Prehistoric sites 41PC442, 41PC443, and 41PC831 have been determined eligible for listing on the NRHP. Sites 41PC442 and 41PC443 are crossed by Route 18, and 41PC831 is 802 feet from Route 17. Historic site 41PC616, part of the Old Spanish Trail, has been determined eligible for listing on the NRHP. The trail is crossed by Routes 10, 15, 18, 20, 21, 22, and 25, and is 322 feet from Routes 13, 16, 17, and 19. Both sites with historic and prehistoric components have been determined eligible for the NRHP. Site 41PC79 and 41PC615 are 808 and 706 feet from Routes 10, 15, 18, and 20, respectively.

Five of the archeological sites, have been determined ineligible for listing on the NRHP. Four of the sites, 41PC686, 41PC761, 41PC762, and 41PC763 are prehistoric sites; and site 41PC828 is a historic site. Site 41PC686 is crossed by Route 17. Site 41PC761 is 404 feet from the centerlines of Routes 1, 5, 7, 8, 12, and 23; 805 feet from the centerlines of Routes 2, 3, 4, 6, 9, 11, 14, 24; and 809 feet from the centerlines of 10, 13, 15, 16, 17, 18, 19, 20, 21, 22, and 25. Site 41PC762 is 72 feet from the centerlines of Routes 10, 13, 15, 16, 17, 18, 19, 20, 21, 22, and 25; and 208 feet from the centerlines of Routes 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 14, 23, and 24. Site 41PC763 is crossed by Routes 13, 16, 17, 19, 21, 22, and 25. Site 41PC828 is 78 feet from Route 17.

The remaining sites have not been formally assessed for listing on the NRHP. Of these, five sites (41PC69, 41PC765, 41PC772, 41PC824, and 41PC825) are crossed by one or more routes. Site 41PC69 is crossed by Routes 3, 10, 12, 22, and 23. Site 41PC765 is crossed by Routes 13, 16, 17, 19, 21, 22, and 25. Site 41PC772 is crossed by Route 20. Site 41PC824 is crossed by Routes 1, 4, 9, and 24. Site 41PC825 is crossed by Routes 1, 4, 8, 9, and 24.

**TABLE 4-31 ARCHEOLOGICAL SITES RECORDED WITHIN 1,000 FEET OF THE PRIMARY ALTERNATIVE ROUTES**

<b>SITE TRINOMIAL</b>	<b>DISTANCE IN FEET FROM CENTERLINE</b>	<b>PRIMARY ALTERNATIVE ROUTE(S)</b>
41PC15	553	10, 15, 18, 20
41PC16	292	10, 15, 18, 20
41PC17	716	10, 15, 18, 20
41PC18	769	10, 13, 15, 16, 17, 19
41PC19	655	10, 13, 15, 16, 17, 19
41PC20	571	10, 13, 15, 16, 17, 19
<b>41PC69</b>	<b>0</b>	<b>3, 10, 12, 22, 23</b>
41PC79	808	10, 15, 18, 20
<b>41PC442</b>	<b>0</b>	<b>18</b>
<b>41PC443</b>	<b>0</b>	<b>18</b>
41PC601	571	21, 22, 25
41PC615	706	10, 15, 18, 20
<b>41PC616</b>	<b>0</b>	<b>10, 15, 18, 20, 21, 22, 25</b>
	322	13, 16, 17, 19,
41PC674	819	18, 20
<b>41PC686</b>	<b>24</b>	<b>17</b>
41PC740	356	18
41PC741	496	18
41PC761	404	1, 5, 7, 8, 12, 23
	805	2, 3, 4, 6, 9, 11, 14, 24
	809	10, 13, 15, 16, 17, 18, 19, 20, 21, 22, 25
41PC762	72	10, 13, 15, 16, 17, 18, 19, 20, 21, 22, 25
	208	1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 14, 23, 24
<b>41PC763</b>	<b>0</b>	<b>13, 16, 17, 19, 21, 22, 25</b>
<b>41PC765</b>	<b>0</b>	<b>13, 16, 17, 19, 21, 22, 25</b>

TABLE 4-31 ARCHEOLOGICAL SITES RECORDED WITHIN 1,000 FEET OF THE PRIMARY ALTERNATIVE ROUTES

SITE TRINOMIAL	DISTANCE IN FEET FROM CENTERLINE	PRIMARY ALTERNATIVE ROUTE(S)
41PC766	300	13, 16, 17, 19, 21, 22, 25
<b>41PC772</b>	<b>0</b>	<b>20</b>
41PC777	745	20
41PC784	412	18, 20
41PC787	709	20
41PC796	949	20
41PC818	977	12, 14
<b>41PC824</b>	<b>62</b>	<b>1, 4, 9, 24</b>
<b>41PC825</b>	<b>67</b>	<b>1, 4, 8, 9, 24</b>
41PC828	78	17
41PC830	243	17
41PC831	802	17
41PC835	514	10, 12, 13, 14, 15, 16, 19
41PC837	649	10, 12, 13, 14, 15, 16, 19
41PC838	783	10, 12, 13, 14, 15, 16, 19
41PC842	274	21

**Bold entries are crossed by a 150-foot ROW centered on the primary alternative route centerline.**

As mentioned previously, the majority of the primary segments have not been surveyed for cultural resources and the potential for undiscovered cultural resources exists. All of the primary alternative routes cross through areas with high probability for archeological sites (prehistoric and historic). Prehistoric HPAs include secondary terraces along major rivers and streams, intact Holocene-era sediments, broad floodplains, areas that may contain chert lithic resources, the edge of terraces above floodplains, and areas near recorded archeological sites. Based on the estimated amount of HPA crossed by each primary alternative route, Routes 8, 6, 24, and 1 cross the least amount of HPA, with 14.7, 15.0, 15.3, and 16.1 miles of HPA crossed by each route, respectively. Routes 21, 22, 25, 18, and 20 cross the greatest amount of HPA, with 27.0, 27.2, 27.5, 31.3, and 31.5 miles of HPA crossed by each route, respectively. Table 4-32 lists the routes and the total length and percentage of their lengths across HPAs.

TABLE 4-32 HIGH PROBABILITY AREAS CROSSED BY THE PRIMARY ALTERNATIVE ROUTES

ROUTE	LENGTH OF HPA CROSSED BY CENTERLINE (MILES)	PERCENT OF LENGTH CROSSING HPA
1	16.1	22.8
2	16.2	23.9
3	18.7	26.9
4	16.6	23.3
5	16.8	23.4
6	15.0	20.2
7	18.7	24.8
8	14.7	19.1
9	16.2	20.6
10	25.3	32.2
11	17.1	22.6
12	24.2	30.2
13	24.3	30.0
14	24.0	29.6
15	25.3	30.7
16	23.3	27.8
17	21.4	26.2
18	31.3	35.4
19	24.1	26.9
20	31.5	35.0
21	27.0	29.4
22	27.2	35.4
23	19.3	26.3
24	15.3	21.5
25	27.5	33.4

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## 5.0 LIST OF PREPARERS

This EA and Alternative Route Analysis was prepared for LCRA TSC and AEP Texas by POWER. LCRA TSC and AEP Texas provided information in Sections 1.0 and 4.0. A list of the POWER employees with primary responsibilities for the preparation of this document is presented below.

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**Appendix A**  
**Agency and Other Correspondence**



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BAKERSFIELD TO SOLSTICE 345-KV TRANSMISSION LINE  
FEDERAL AND STATE AGENCIES

FEDERAL

Mr. Kevin L. Solco  
Southwest Regional Administrator  
Federal Aviation Administration  
10101 Hillwood Parkway  
Fort Worth, TX 76177

Mr. Tony Robinson  
Region 6 Regional Administrator  
Federal Emergency Management Agency  
FRC 800 N. Loop 288  
Denton, TX 76209-3698

Mr. Salvador Salinas  
State Conservationist  
NRCS Texas State Office  
101 South Main Street  
Temple, TX 76501

Ms. Anne Idsal  
Region 6 Administrator  
U.S. Environmental Protection Agency  
1445 Ross Avenue, Suite 1200  
Dallas, TX 75202

Mr. Adam Zerrenner  
Field Supervisor  
U.S. Fish & Wildlife Service  
10711 Burnet Rd., Ste. 200  
Austin, TX 78758-4455

Lt. Col. James L. Booth  
Commander  
USACE - Albuquerque District  
4101 Jefferson Plaza NE  
Albuquerque, NM 87109-3435

Mr. John Wessels  
Intermountain Regional Director  
National Parks Service  
[IMRextrev@nps.gov](mailto:IMRextrev@nps.gov)

Mr. Ron Tickle  
Executive Director  
U. S. Department of Defense Siting  
Clearinghouse  
3400 Defense Pentagon, Room 5C646  
Washington, DC 20301-3400

STATE

Ms. Laura Zebehazy  
Wildlife Habitat Assessment Program  
Texas Parks and Wildlife Department  
4200 Smith School Road  
Austin, TX 78744

Ms. Lorinda Gardner  
Regional Director  
Texas Commission on Environmental Quality  
9900 W. IH-20, Ste. 100  
Midland, TX 79706

Mr. David Fulton  
Director, Department of Aviation  
Texas Department of Transportation  
125 E. 11th Street  
Austin, TX 78701-2483

Mr. Carlos Swonke, P.E.  
Director, Environmental Affairs Division  
Texas Department of Transportation  
125 E. 11th Street  
Austin, TX 78701-2483

Mr. Peter Smith, P.E.  
Director, Planning & Programming  
Texas Department of Transportation  
125 E. 11th Street  
Austin, TX 78701-2483

Mr. John R. Speed, P.E.  
Odessa District Engineer  
Texas Department of Transportation  
3901 E. Highway 80  
Odessa, Texas 79761

Mr. Mark Wolfe  
Executive Director  
Texas Historical Commission  
P.O. Box 12276  
Austin, TX 78711

Mr. Gero P. Bush  
Commissioner  
Texas General Land Office  
1700 N. Congress Ave., Suite 935  
Austin, TX 78701-1495



BAKERSFIELD TO SOLSTICE 345-KV TRANSMISSION LINE  
FEDERAL AND STATE AGENCIES

Mr. Wei Wang  
Executive Director  
Railroad Commission of Texas  
P.O. Box 12967  
Austin, TX 78711-2967

Mr. Jeff Walker  
Executive Administrator  
Texas Water Development Board  
P.O. Box 13231  
Austin, TX 78711-3231

Ms. Terri Moore  
Executive Director  
Permian Basin Regional Planning Commission  
P.O. Box 60660,  
Midland, TX 79711-0660

Mr. Ernest Woodward  
Chair  
Pecos County Historical Commission  
HC 73 Box  
McCamey, TX 79752



POWER ENGINEERS, INC.  
16825 NORTHCHASE DRIVE  
SUITE 1200  
HOUSTON, TX 77060 USA

PHONE 281-765-5500  
FAX 281-765-5599

January 29, 2018  
(Via Mail)

Mr. Ron Tickle  
Executive Director  
U. S. Department of Defense Siting Clearinghouse  
3400 Defense Pentagon, Room 5C646  
Washington, DC 20301-3400

Re: Proposed Bakersfield to Solstice 345-kV Transmission Line Project  
Pecos County, Texas  
POWER Engineers, Inc. Project No. 149604

Dear Mr. Tickle:

LCRA Transmission Services Corporation (LCRA TSC) and AEP Texas Inc. (AEP Texas) are jointly proposing to build and operate a new 345-kilovolt (kV) transmission line in Pecos County, Texas. The proposed 345-kV line will extend between the existing LCRA TSC Bakersfield Substation located approximately six miles north of Interstate Highway (IH) 10 and one mile west of Farm-to-Market (FM) 1901 and the existing AEP Texas Solstice Substation located approximately 25 miles west of the City of Fort Stockton along IH 10. This entire project will be approximately 70 miles long, depending on the final route. LCRA TSC will construct, own, and operate the eastern half of the transmission line (connecting to the Bakersfield Substation) and AEP Texas will construct, own, and operate the western half of the transmission line (connecting to the Solstice Substation). The location of the study area is shown on the enclosed map.

POWER Engineers, Inc. (POWER) is preparing an Environmental Assessment (EA) and Alternative Route Analysis for LCRA TSC and AEP Texas to support their joint application for an amendment to each of their existing Certificates of Convenience and Necessity (CCNs) from the Public Utility Commission of Texas (PUC). POWER is gathering data on the existing environment and identifying environmental and land use constraints within the study area. LCRA TSC, AEP Texas, and POWER will identify potential alternative route segments that consider the data gathered regarding environmental and land use constraints.

We are requesting that your agency/office provide information concerning environmental and land use constraints or other issues of interest to your agency/office within the study area. Your input will be an important consideration in the evaluation of alternative routes and in the assessment of potential impacts of those routes. In addition, we would appreciate receiving information about any permits, easements, or other approvals by your agency/office that you believe could affect this project, or if you are aware of any major proposed development or construction in the study area. Upon approval of the application and identification of a final route for the proposed project by the PUC, LCRA TSC and AEP Texas will identify and obtain necessary permits, if required, from your agency/office.

January 29, 2018

Thank you for your assistance with this proposed electric transmission line project. Please contact me by phone at 281-765-5507, or by e-mail at [lisa.barko@powereng.com](mailto:lisa.barko@powereng.com) if you have any questions or require additional information. We would appreciate receiving your reply by February 23, 2018.

Sincerely,

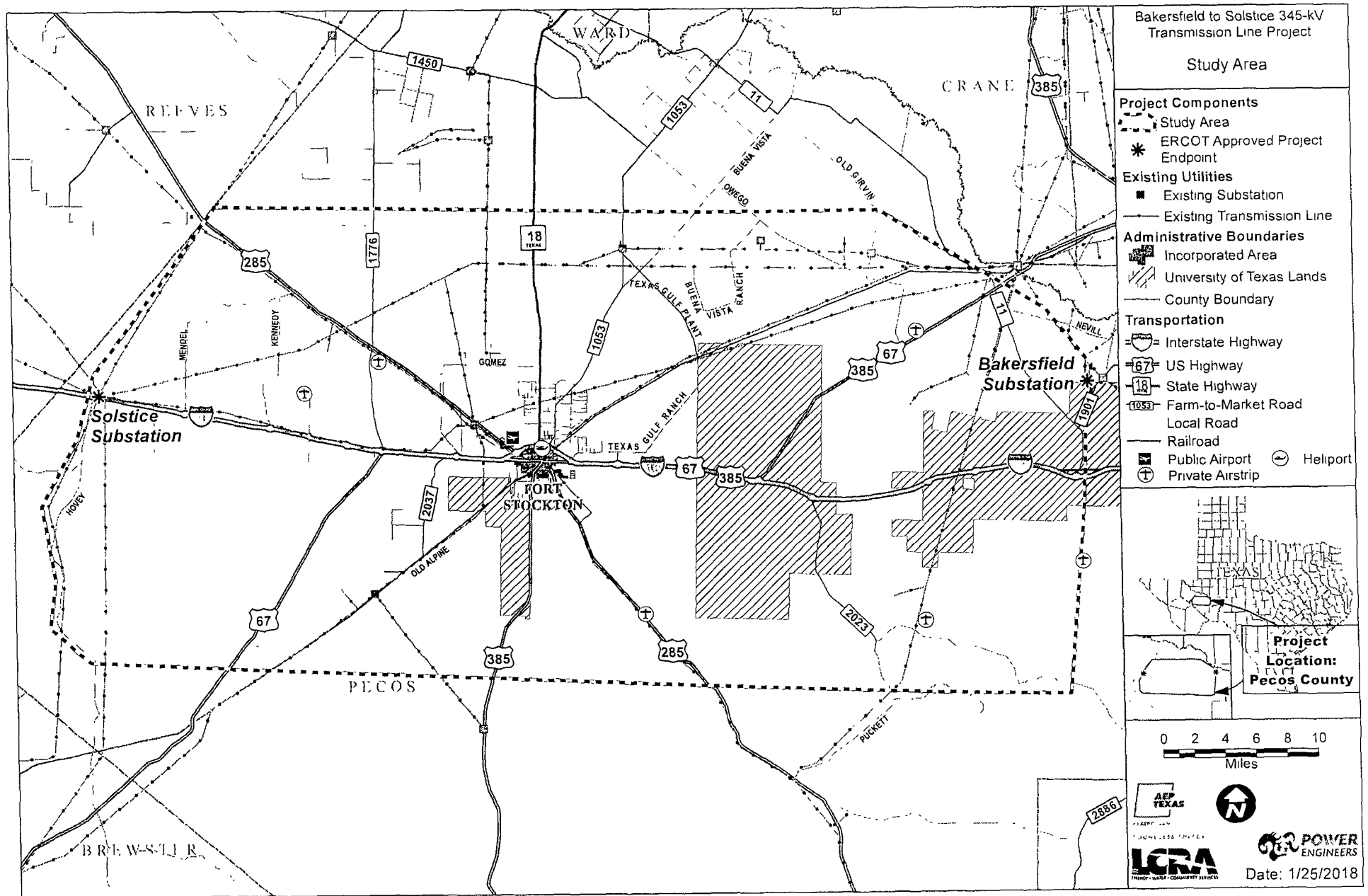


Lisa Barko Meaux  
Project Manager

Enclosure(s):  
Preliminary Study Area Map

Sent Via Mail  
ProjectWise 149604





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Bakersfield - Solstice\_Public Generators

Organization	Formal Title	Prefix	Contact	Formal	Address 1	City	State	Zip
AEP	Wind Farm Operations Manager	Mr.	Jackie Oliver	Mr. Oliver	8135 East Highway 190	Iraan	TX	79744
NextEra Energy, Inc.	Manager, Business Management	Mr	Hannes Grobler	Mr. Grobler	700 Universe Boulevard	Juno Beach	FL	33408
Sherbino   Wind Farm LLC, c/o BP Wind Energy North America Inc.	Asset Manager	Mr.	James Holly	Mr. Holly	700 Louisiana Street, 33rd Floor	Houston	TX	77002
East Pecos Solar, LLC; c/o First Solar	Supervisor, MOC	Mr.	Brian Penner	Mr. Penner	350 West Washington Street	Tempe	AZ	85281
Barrilla Solar c/o First Solar	Director, Project Management	Ms.	Kathryn Arbeit	Ms. Arbeit	135 Main Street, 6th Floor	San Francisco	CA	94105
BHE Renewables, LLC		Mr.	Joe Brannon	Mr. Brannon	1850 N. Central Ave. Suite 1025	Phoenix	AZ	85004
Recurrent Energy Development Holdings, LLC	Director, Asset Management	Mr.	Andrew Griffiths	Mr. Griffiths	300 California Street, 7th Floor	San Francisco	CA	94104
BHE Renewables, LLC	Project Manager	Mr.	Steve Wotruba	Mr. Wotruba	1850 N. Central Ave. Suite 1025	Phoenix	AZ	85004
Buckthorn Westex, LLC	Director, Project Development	Mr.	Scott Pryor	Mr. Pryor	700 Lavaca Street, Suite 1430	Austin	TX	78701
Duke Energy Renewables Solar, LLC	Director, System Interconnection Services	Mr.	Graham Furlong	Mr. Furlong	550 South Caldwell Street, Mail Drop NAS06	Charlotte	NC	28202
Midway Solar LLC; c/o Hanwha Q Cells USA Corp	Director, Interconnection and Land Develo	Mr.	Brisen R. Ellinghaus	Mr. Ellinghaus	300 Spectrum Center Drive, Suite 1250	Irvine	CA	92618

## Bakersfield - Solstice Utilities

Organization	Formal Title	Prefix	Contact	Formal	Address 1	City	State	Zip
Rio Grande Electric Co-Op	General Manager/CEO	Mr.	Daniel Laws	Mr. Laws	778 E. US Hwy 90	Bracketville	TX	78832
Texas New Mexico Power Co	President	Mr.	Neal Walker	Mr Walker	577 N Garden Ridge Blvd	Lewisville	TX	75067
City of Fort Stockton Utilities	Public Works Director	Mr.	Aaron Ramos	Mr. Ramos	121 W. 2nd Street	Fort Stockton	TX	79735
AEP Texas Inc	President & COO	Ms.	Judith Talavera	Ms. Talavera	539 North Carancahua	Corpus Christi	TX	78401
Southwest Texas Electric Cooperative	General Manager	Mr.	William Whitten	Mr Whitten	P O. Box 677	El Dorado	TX	76936

Bakersfield - Solstice\_ISDs

Organization	Formal Title	Prefix	Contact	Formal	Address 1	City	State	Zip
Fort Stockton ISD	President	Mr.	Billy Espino	Mr Espino	1500 W 18th	Fort Stockton	TX	79735
Fort Stockton ISD	Vice President	Mr.	Flo Garcia III	Mr Garcia	101 West Division Street	Fort Stockton	TX	79735
Fort Stockton ISD	Secretary	Mr	Freddie Martinez	Mr. Martinez	4123 North Orient	Fort Stockton	TX	79735
Fort Stockton ISD	Assistant Secretary	Mr.	Anastacio Dominguez	Mr. Dominguez	1608 N. Rio	Fort Stockton	TX	79735
Fort Stockton ISD	School Board Member	Ms.	Sandra Marquez	Ms. Marquez	101 West Division Street	Fort Stockton	TX	79735
Fort Stockton ISD	School Board Member	Mr	Tom Ezell	Mr. Ezell	109 North Colpitts	Fort Stockton	TX	79735
Fort Stockton ISD	School Board Member	Mr.	Andy Rivera	Mr. Rivera	101 W. Division Street	Fort Stockton	TX	79735
Fort Stockton ISD	Superintendent	Mr.	Ralph Traynham	Mr. Traynham	101 West Division Street	Fort Stockton	TX	79735
Fort Stockton ISD	Assistant Superintendent	Ms.	Paula Traynham	Ms. Traynham	101 West Division Street	Fort Stockton	TX	79735
Buena Vista ISD	President	Mr	Cruz Gomez	Mr. Gomez	404 West Highway 11	Imperial	TX	79743
Buena Vista ISD	Vice President	Ms.	Veronica Mandujano	Ms Mandujano	404 West Highway 11	Imperial	TX	79743
Buena Vista ISD	Secretary	Mr.	Cody Alford	Mr. Alford	404 West Highway 11	Imperial	TX	79743
Buena Vista ISD	School Board Member	Mr.	Jacob Heritage	Mr. Heritage	404 West Highway 11	Imperial	TX	79743
Buena Vista ISD	School Board Member	Mr.	Paul Bruce Ivey	Mr Ivey	404 West Highway 11	Imperial	TX	79743
Buena Vista ISD	School Board Member	Mr.	Roger Tarango	Mr. Tarango	404 West Highway 11	Imperial	TX	79743
Buena Vista ISD	Superintendent	Mr.	Mark Dominguez	Mr. Dominguez	404 West Highway 11	Imperial	TX	79743
Pecos-Barstow-Toyah ISD	President	Ms.	Gail Box	Ms. Box	1301 South Eddy Street	Pecos	TX	79772
Pecos-Barstow-Toyah ISD	Vice President	Mr.	Randy Graham	Mr. Graham	1301 South Eddy Street	Pecos	TX	79772
Pecos-Barstow-Toyah ISD	Secretary	Ms.	Bertha Natividad	Ms. Natividad	1301 South Eddy Street	Pecos	TX	79772
Pecos-Barstow-Toyah ISD	Assistant Secretary	Mr.	Clay McKinney	Mr McKinney	1301 South Eddy Street	Pecos	TX	79772
Pecos-Barstow-Toyah ISD	School Board Member	Mr.	Sam Contreras	Mr. Contreras	1301 South Eddy Street	Pecos	TX	79772
Pecos-Barstow-Toyah ISD	School Board Member	Ms.	Crissy Meza	Ms Meza	1301 South Eddy Street	Pecos	TX	79772
Pecos-Barstow-Toyah ISD	School Board Member	Ms	Angelica Valenzuela	Ms. Valenzuela	1301 South Eddy Street	Pecos	TX	79772
Pecos-Barstow-Toyah ISD	Superintendent	Mr.	Jim Haley	Mr Haley	1301 South Eddy Street	Pecos	TX	79772
Iraan-Sheffield ISD	President	Ms.	Margaret G Holmes	Ms. Holmes	P.O. Box 486	Iraan	TX	79744
Iraan-Sheffield ISD	Vice President	Mr.	Steve Garlock	Mr. Garlock	P.O. Box 486	Iraan	TX	79744
Iraan-Sheffield ISD	Secretary	Mr.	Basiliso Ramirez	Mr. Ramirez	P.O. Box 486	Iraan	TX	79744
Iraan-Sheffield ISD	School Board Member	Mr.	John Graham	Mr Graham	P O Box 486	Iraan	TX	79744
Iraan-Sheffield ISD	School Board Member	Mr.	Joe Sconiers	Mr. Sconiers	P O. Box 486	Iraan	TX	79744
Iraan-Sheffield ISD	School Board Member	Mr.	Tory Cox	Mr. Cox	P O. Box 486	Iraan	TX	79744
Iraan-Sheffield ISD	School Board Member	Mr.	Roy Burks	Mr Burks	P O Box 486	Iraan	TX	79744
Iraan-Sheffield ISD	Superintendent	Mr	Kevin Allen	Mr Allen	P O Box 486	Iraan	TX	79744

Bakersfield - Solstice\_State Federal Officials

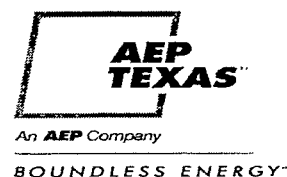
Organization	Prefix	Contact	Formal	Formal Title	Address1	City	State	Zip
Texas House of Representatives	The Honorable	Poncho Nevarez	Representative Nevarez	State Representative	P.O. Box 2910	Austin	TX	78768
Texas House of Representatives	The Honorable	Poncho Nevarez	Representative Nevarez	State Representative	1995 Williams St	Eagle Pass	TX	78852
Texas Senate	The Honorable	Carlos I. Uresti	Senator Uresti	State Senator	P.O. Box 12068	Austin	TX	78711
Texas Senate	The Honorable	Carlos I. Uresti	Senator Uresti	State Senator	3315 Sidney Brooks Dr., Ste. 100	San Antonio	TX	78235
United States House of Representatives	The Honorable	Will Hurd	Representative Hurd	United States Representative	317 Cannon House Office Building	Washington	DC	20515
United States House of Representatives	The Honorable	Will Hurd	Representative Hurd	United States Representative	103 West Callaghan	Fort Stockton	TX	79735
United States Senate	The Honorable	John Cornyn	Senator Cornyn	United States Senator	517 Hart Senate Office Building	Washington	DC	20510
United States Senate	The Honorable	John Cornyn	Senator Cornyn	United States Senator	221 West Sixth Street, Suite 1530	Austin	TX	78701
United States Senate	The Honorable	Ted Cruz	Senator Cruz	United States Senator	404 Russell	Washington	DC	20510
United States Senate	The Honorable	Ted Cruz	Senator Cruz	United States Senator	300 East 8th Street, Suite 961	Austin	TX	78701

Bakersfield - Solstice\_Public Officials

Organization	Formal Title	Prefix	Contact	Formal	Address 1	City	State	Zip
Pecos County	County Judge	The Honorable	Joe Shuster	Judge Shuster	103 W. Callaghan	Fort Stockton	TX	79735
Pecos County	Commissioner Precinct 1	The Honorable	Tom Chapman	Commissioner Chapman	P.O. Box 1624	Fort Stockton	TX	79735
Pecos County	Commissioner Precinct 2	The Honorable	Lupe Dominguez	Commissioner Dominguez	P.O. Box 220	Fort Stockton	TX	79735
Pecos County	Commissioner Precinct 3	The Honorable	Mickey Jack Perry	Commissioner Perry	P.O. Box 456	Iraan	TX	79744
Pecos County	Commissioner Precinct 4	The Honorable	Santiago Cantu, Jr.	Commissioner Cantu	P.O. Box 10	Fort Stockton	TX	79735
Pecos County Chamber of Commerce	President	Ms.	Jeanette Milam	Ms. Milam	1000 Railroad Avenue	Fort Stockton	TX	79735
Pecos County Chamber of Commerce	Executive Vice President	Ms.	Arna McCorkle	Ms. Corkle	1000 Railroad Avenue	Fort Stockton	TX	79735
City of Fort Stockton	Mayor	The Honorable	Chris Alexander	Mayor Alexander	121 W. 2nd Street	Fort Stockton	TX	79735
City of Fort Stockton	Mayor Pro Tem	The Honorable	Billy Jackson	Mayor Pro Tem Jackson	121 W. 2nd Street	Fort Stockton	TX	79735
City of Fort Stockton	City Councilman	The Honorable	Ruben Falcon	Council Member Falcon	121 W. 2nd Street	Fort Stockton	TX	79735
City of Fort Stockton	City Councilman	The Honorable	Dino Ramirez	Council Member Ramirez	121 W. 2nd Street	Fort Stockton	TX	79735
City of Fort Stockton	City Councilman	The Honorable	Mike Ureta	Council Member Ureta	121 W. 2nd Street	Fort Stockton	TX	79735
City of Fort Stockton	City Councilman	The Honorable	James Warnock	Council Member Warnock	121 W. 2nd Street	Fort Stockton	TX	79735
City of Fort Stockton	City Manager	Mr.	Frank Rodriguez III	Mr. Rodriguez	121 W. 2nd Street	Fort Stockton	TX	79735
City of Fort Stockton	Assistant City Manager	Ms.	Shera Lee Davis	Ms. Davis	121 W. 2nd Street	Fort Stockton	TX	79735
The Texas Office of Public Utility Counsel	Public Counsel	Ms.	Michelle Gregg	Ms. Gregg	1701 N. Congress Ave., Suite 9-180	Austin	TX	78711

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February 8, 2018

«Prefix» «Contact»

«Formal\_Title»

«Organization»

«Address\_1»

«City», «State» «Zip»

Re: Proposed LCRA TSC & AEP Texas Bakersfield-Solstice 345-kV Transmission Line Project, Pecos County, Texas

Dear «Formal»:

LCRA Transmission Services Corporation (LCRA TSC) and AEP Texas, Inc. (AEP Texas) propose to add electric transmission line infrastructure in Pecos County, Texas. The proposed infrastructure will help to improve the reliability of the Far West Texas portion of the ERCOT interconnected transmission system and accommodate future load and generating capacity growth in this region. An initial step in the state-regulated transmission line routing process is to solicit input about the study area from local elected officials and public agencies. ***Please review the study area on the enclosed map and provide us with any information that may assist us in developing potential locations of the future transmission infrastructure.***

#### **Project Description**

LCRA TSC and AEP Texas are jointly proposing to build and operate a new 345-kilovolt (kV), double-circuit-capable transmission line in Pecos County. The new line will extend between AEP Texas' existing Solstice Substation located along I-10 approximately 25 miles west of the City of Fort Stockton to LCRA TSC's existing Bakersfield Substation located approximately six miles north of I-10 and one mile west of FM 1901. LCRA TSC will construct, own and operate the eastern half of the transmission line (connecting to the Bakersfield Substation) and AEP Texas will construct, own and operate the western half of the transmission line (connecting to the Solstice Substation). The proposed transmission line will be approximately 70 miles long, depending on the final route approved by the Public Utility Commission of Texas (PUC).

#### **Reliability**

Transmission utilities that own and operate facilities within the Electric Reliability Council of Texas (ERCOT), including LCRA TSC and AEP Texas, plan and operate their transmission facilities in close coordination with ERCOT's directives. ERCOT conducted studies on the load, resource and transmission constraint data for the Far West Texas region and concluded there are reliability and long-term needs to improve the transmission system in the area. ERCOT recommended the Bakersfield to Solstice Transmission Project to address those needs. The proposed infrastructure will help to improve the reliability of the Far West Texas portion of the interconnected ERCOT transmission system.

### **Your Input in the Regulatory Process**

The PUC regulates transmission line routing in Texas. As part of that process, transmission companies routinely solicit input from local elected officials and surrounding agencies that may know of potential impacts in the study area that could impact a transmission route. Your input is important in evaluating alternative routes and assessing potential impacts of those route alternatives. ***LCRA TSC and AEP Texas request that your office provide any information that could affect potential transmission line routes in this area.***

Specifically, we ask you to consider any impacts that involve:

- Environmental and land use constraints
- Current or planned land development projects
- Construction projects
- Other areas of interest within the study area

Additionally, we would appreciate receiving information about any of the following conditions that you believe could affect this project:

- Permits
- Easements
- Other required approvals by your agency/office

If the PUC approves and selects a route for the project, LCRA TSC and AEP Texas will then proceed to obtain any necessary permits from your agency/office for the approved route.

### **Next Steps in the Regulatory Process**

The consultant for this project, POWER Engineers, Inc. (POWER), is preparing an Environmental Assessment and Alternative Route Analysis for LCRA TSC and AEP Texas' joint application to amend each party's existing Certificate of Convenience and Necessity from the PUC. As part of the Environmental Assessment, POWER is gathering data on the project study area and identifying environmental and land use constraints as part of the Environmental Assessment. LCRA TSC, AEP Texas and POWER will use this information to identify potential alternative route segments that take into account these constraints.

Once POWER identifies preliminary alternate route segments for the project, we will invite you and potentially affected landowners to an open house to review the environmental and land use constraints maps as well as many other exhibits.

Please note the enclosed PUC Certification Process for Transmission Lines. We hope this chart will provide you with an understanding of the regulated process we must follow and your role in it. In addition, we will post and update project information on LCRA's website at [www.lcra.org/baksol](http://www.lcra.org/baksol).

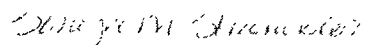
We appreciate your assistance with this project. Please send your input by mail, telephone or email to either:

Sonya Strambler  
Regulatory Case Manager  
Lower Colorado River Authority  
P.O. Box 220, Mailstop D-140  
Austin, Texas 78767-0220  
(512) 578-1856  
[sonya.strambler@lcra.org](mailto:sonya.strambler@lcra.org)

Randal Roper  
Regulatory Case Manager  
AEP Texas  
400 W 15<sup>th</sup> St., Suite 1520  
Austin, Texas 78701-1677  
(512) 481-4572  
[reroper@aep.com](mailto:reroper@aep.com)

Please contact Sonya Strambler or Randal Roper if you have any questions. A response by March 8, 2018, is greatly appreciated.

Sincerely,



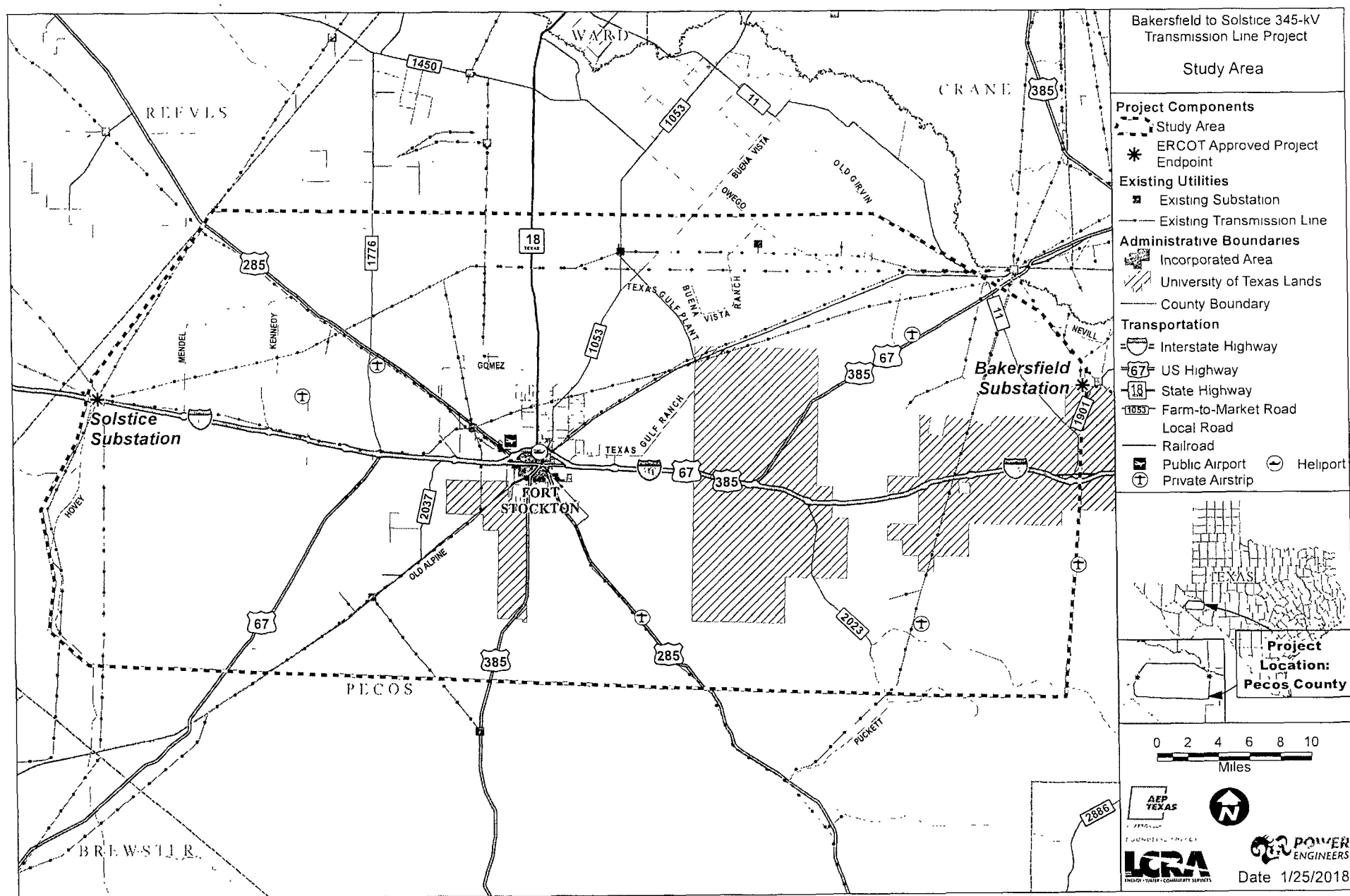
Sonya Strambler  
Regulatory Case Manager  
Lower Colorado River Authority

Randal Roper  
Regulatory Case Manager  
AEP Texas

Enclosures

cc: Lisa Barko Meaux (POWER Engineers, Inc.)

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# PUBLIC UTILITY COMMISSION CERTIFICATION PROCESS

## Electric Utility Defines Project

- Conduct research and review studies to determine need.
- Identify needed facilities and end points of the project.

## Electric Utility Conducts Environmental Assessment and Routing Analysis

- Establish study area based on project definition.
- Gather data about study area and map environmental and land use constraints in study area.
- Determine preliminary transmission line segments.
- Hold open house to gather public input.
- Analyze data and feedback from the public to develop primary transmission line routes, including multiple alternatives.
- Prepare an Environmental Assessment Report.

## Electric Utility Applies for CCN Amendment

- Submit application to the Public Utility Commission of Texas (PUC) to amend Certificate of Convenience and Necessity (CCN).
- Send notices to landowners whose properties may be crossed or who own a habitable structure within 500 feet of route alternatives at the time CCN application is filed.
- Send notices to municipalities and electric utilities within five miles of the project and to local government entities where the project will potentially be located.

## Public Participation

- After the CCN application is filed, people who are potentially impacted by the project have an opportunity to participate in the application proceeding at the PUC by filing a request to participate (intervene) within 45 days.
- If no parties intervene in the proceeding, the PUC staff conducts a review and issues a recommendation to the PUC.
- If parties have intervened in the proceeding, testimony may be filed, an administrative hearing may be held, and an administrative law judge will prepare a recommendation to the PUC regarding the application.

## PUC Decision

- Within 12 months of the CCN application filing, the PUC will approve or deny the application, or approve it with modifications.
- PUC approval directs the electric utility to build the new transmission line along the route selected by the PUC.



U S Department  
of Transportation  
**Federal Aviation  
Administration**

Southwest Region  
10101 Hillwood Parkway  
Fort Worth, TX 76177

FEB 14 2018

Lisa Meaux  
Power Engineers, Inc.  
16825 Northchase Drive  
Suite 1200  
Houston, TX 77060

Dear Ms. Meaux:


This is in response to your January 29, 2018 correspondence concerning a proposed new 345-kilovolt transmission line in Pecos County, Texas. You requested information concerning environmental and land use constraints or other issues within the study area. You also requested information regarding any permits, easements, or other approvals by the agency that may affect the project.

As stated in Title 14 of the Code of Federal Regulations (14 CFR) Part 77, Objects that Affect the Navigable Airspace, the prime objectives of the FAA are to promote air safety and the efficient use of the navigable airspace.

To accomplish this mission, aeronautical studies are conducted based on information provided by the proponents on FAA Form 7460-1, Notice of Proposed Construction or Alteration. If your organization is planning to sponsor any construction or alterations which may affect navigable airspace, you must file FAA Form 7460-1 electronically via <https://oeaaa.faa.gov/oeaaa/external/portal.jsp>.

For future reference, you may contact the Obstruction Evaluation Group at 10101 Hillwood Parkway, Fort Worth, Texas 76177 or (817) 222-5934.

Sincerely,

*for*   
Terry L. Biggio  
Regional Administrator,  
Southwest Region

CC: Obstruction Evaluation Group, AJV-15





**FEMA**

FEDERAL EMERGENCY MANAGEMENT AGENCY  
REGION 6  
MITIGATION DIVISION

**RE:** Proposed Bakersfield to Solstice 345-kV Transmission Line Project Pecos County, Texas  
POWER Engineers, Inc. Project No. 149604

## **NOTICE REVIEW/ENVIRONMENTAL CONSULTATION**

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☒ We have no comments to offer.      ☐ We offer the following comments:

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REVIEWER:

*Colleen Sciano*  
Floodplain Management and Insurance Branch  
Mitigation Division  
(940) 898-7527

March 6, 2018



POWER ENGINEERS, INC.  
16825 NORTHCHASE DRIVE  
SUITE 1200  
HOUSTON, TX 77060 USA

PHONE 281-765-5500  
FAX 281-765-5599

January 29, 2018  
(Via Mail)

Mr. Tony Robinson  
Region 6 Administrator  
Federal Emergency Management Agency  
FRC 800 N. Loop 288  
Denton, TX 76209-3698

18-1-43239

Date Rec'd.	1/13/18
Rec'd by	LE
Info	
EA	
Design	
XA	
Approval	
Permit	
MIT	
MSD	
NP	
Grants	
File	
Suspense Date:	2/14/18

Re: Proposed Bakersfield to Solstice 345-kV Transmission Line Project  
Pecos County, Texas  
POWER Engineers, Inc. Project No. 149604

Dear Mr. Robinson:

LCRA Transmission Services Corporation (LCRA TSC) and AEP Texas Inc. (AEP Texas) are jointly proposing to build and operate a new 345-kilovolt (kV) transmission line in Pecos County, Texas. The proposed 345-kV line will extend between the existing LCRA TSC Bakersfield Substation located approximately six miles north of Interstate Highway (IH) 10 and one mile west of Farm-to-Market (FM) 1901 and the existing AEP Texas Solstice Substation located approximately 25 miles west of the City of Fort Stockton along IH 10. This entire project will be approximately 70 miles long, depending on the final route. LCRA TSC will construct, own, and operate the eastern half of the transmission line (connecting to the Bakersfield Substation) and AEP Texas will construct, own, and operate the western half of the transmission line (connecting to the Solstice Substation). The location of the study area is shown on the enclosed map.

POWER Engineers, Inc. (POWER) is preparing an Environmental Assessment (EA) and Alternative Route Analysis for LCRA TSC and AEP Texas to support their joint application for an amendment to each of their existing Certificates of Convenience and Necessity (CCNs) from the Public Utility Commission of Texas (PUC). POWER is gathering data on the existing environment and identifying environmental and land use constraints within the study area. LCRA TSC, AEP Texas, and POWER will identify potential alternative route segments that consider the data gathered regarding environmental and land use constraints.

We are requesting that your agency/office provide information concerning environmental and land use constraints or other issues of interest to your agency/office within the study area. Your input will be an important consideration in the evaluation of alternative routes and in the assessment of potential impacts of those routes. In addition, we would appreciate receiving information about any permits, easements, or other approvals by your agency/office that you believe could affect this project, or if you are aware of any major proposed development or construction in the study area. Upon approval of the application and identification of a final route for the proposed project by the PUC, LCRA TSC and AEP Texas will identify and obtain necessary permits, if required, from your agency/office.

January 29, 2018

Thank you for your assistance with this proposed electric transmission line project. Please contact me by phone at 281-765-5507, or by e-mail at [lisa.barko@powereng.com](mailto:lisa.barko@powereng.com) if you have any questions or require additional information. We would appreciate receiving your reply by February 23, 2018.

Sincerely,



Lisa Barko Meaux  
Project Manager

Enclosure(s):  
Preliminary Study Area Map

Sent Via Mail  
ProjectWise 149604



**Meaux, Lisa**

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**From:** Meaux, Lisa  
**Sent:** Monday, August 13, 2018 11:25 AM  
**To:** 'justin.criggs@usace.army.mil'  
**Cc:** Williams, Denise; Innes, Emily  
**Subject:** RE: Bakersfield to Solstice 345-kV Transmission Line Project

Good morning Mr. Riggs,

We have not seen a response to this submittal. Have we missed it or is it in progress? If we need to resent the attachments we can certainly do that as well or answer any questions you may have.

Kindly please confirm receipt of this email.

Thank you in advance,  
Lisa

LISA BARKO MEAUX  
PROJECT MANAGER  
ENVIRONMENTAL DEPARTMENT MANAGER  
16825 Northchase Drive, Suite 1200  
Houston, Texas 77060

281-765-5507 direct  
713-962-8476 cell  
[lisa.barko@powereng.com](mailto:lisa.barko@powereng.com)

**POWER Engineers, Inc.**  
[www.powereng.com](http://www.powereng.com)

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**From:** Meaux, Lisa  
**Sent:** Thursday, February 15, 2018 12:38 PM  
**To:** [justin.criggs@usace.army.mil](mailto:justin.criggs@usace.army.mil)  
**Cc:** Williams, Denise ([denise.williams@powereng.com](mailto:denise.williams@powereng.com))  
**Subject:** Bakersfield to Solstice 345-kV Transmission Line Project

Mr. Riggs,

Thank you for your call on February 13, 2018. As requested, attached is a copy of the letter and map that was sent to Lieutenant Booth in Albuquerque, New Mexico on January 29, 2018. Thank you for your interest in the Bakersfield to Solstice 345-kV Transmission Line Project. If you have any questions after reviewing the letter please give me a call at 281-765-5507.

Thank you,  
Lisa

<< File: Bakersfield\_Solstice\_AgencyContact\_USACE Alb. District\_2018-02-15.pdf >> << File: Bakersfield\_Solstice\_AgencyContact\_11x17\_20180125.pdf >>

LISA BARKO MEAUX  
PROJECT MANAGER  
ENVIRONMENTAL DEPARTMENT MANAGER

16825 Northchase Drive, Suite 1200  
Houston, Texas 77060

281-765-5507 direct  
713-962-8476 cell  
[lisa.barko@powereng.com](mailto:lisa.barko@powereng.com)

**POWER Engineers, Inc.**  
[www.powereng.com](http://www.powereng.com)



United States Department of Agriculture

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Natural Resources  
Conservation Service

State Office

101 S. Main Street  
Temple, TX 76501  
Voice 254.742.9800  
Fax 254.742.9819

February 8, 2018

POWER Engineers, Inc.  
16825 Northchase Dr., Suite 1200  
Houston, Texas 77060

Attention: Lisa Barko Meaux, Project Manager

Subject: LNU-Farmland Protection  
Proposed Bakersfield to Solstice 345-kV Transmission Line Project  
NEPA/FPPA Evaluation  
Pecos County, Texas

We have reviewed the information provided in your correspondence dated January 29, 2018 concerning the proposed transmission line project located in Pecos County, Texas. This review is part of the National Environmental Policy Act (NEPA) evaluation for the Public Utility Commission of Texas (PUC). We have evaluated the proposed site as required by the Farmland Protection Policy Act (FPPA).

The proposed project site may involve areas of Prime Farmland; however, we now consider the installation of transmission lines to be a minimal impact that will have no effect on productive agricultural lands. Due to these reasons, the proposed project is exempt from provisions of FPPA and no further consideration for protection is necessary.

Please find the attached Custom Soil Resources Report. The soil physical and chemical properties are presented, along with additional restrictions or interpretations for the project area.

Along the project area, several concerns should be considered, including limitations to depth of restrictive layer, slope gradient, and erosion potential. We have included these reports as attachments to the soils report.

The proposed site does not involve USDA-NRCS floodwater retarding structures (FRS) or Wetland Reserve Program (WRP) conservation easements on or near the project area. We recommend that the entities developing these areas continue coordination with the Texas Parks and Wildlife Department and the US Fish and Wildlife Service to avoid adverse impacts to wetland ecosystems and habitats.

We strongly encourage the use of acceptable erosion control methods during the construction of this project.



United States Department of Agriculture

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If you have further questions, please contact me at 254.742.9836 or by email at Carlos.Villarreal@tx.usda.gov (Preferred).

Sincerely,

**CARLOS  
VILLARREA  
L**

Carlos J. Villarreal  
NRCS Soil Scientist

Digitally signed by  
CARLOS  
VILLARREAL  
Date: 2018.02.08  
12:38:52 -06'00'

Attachment: **Custom Soil Resource Report for Pecos County, Texas**



## United States Department of the Interior

### FISH AND WILDLIFE SERVICE

Austin Ecological Services Field Office

10711 Burnet Road, Suite 200

Austin, TX 78758-4460

Phone: (512) 490-0057 Fax: (512) 490-0974

<http://www.fws.gov/southwest/es/AustinTexas/>

<http://www.fws.gov/southwest/es/EndangeredSpecies/lists/>



In Reply Refer To:

August 16, 2018

Consultation Code: 02ETAU00-2018-SLI-1395

Event Code: 02ETAU00-2018-E-02717

Project Name: Bakersfield to Solstice Transmission Line Project

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that *may* occur within the county of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

Please note that new information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Also note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of federally listed as threatened



or endangered species and to determine whether projects may affect these species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

While a Federal agency may designate a non-Federal representative to conduct informal consultation or prepare a biological assessment, the Federal Agency must notify the Service in writing of any such designation. The Federal agency shall also independently review and evaluate the scope and content of a biological assessment prepared by their designated non-Federal representative before that document is submitted to the Service.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by a federally funded, permitted or authorized activity, the agency is required to consult with the Service pursuant to 50 CFR 402. The following definitions are provided to assist you in reaching a determination:

- *No effect* - the proposed action will not affect federally listed species or critical habitat. A “no effect” determination does not require section 7 consultation and no coordination or contact with the Service is necessary. However, if the project changes or additional information on the distribution of listed or proposed species becomes available, the project should be reanalyzed for effects not previously considered.
- *May affect, but is not likely to adversely affect* - the project may affect listed species and/or critical habitat; however, the effects are expected to be discountable, insignificant, or completely beneficial. Certain avoidance and minimization measures may need to be implemented in order to reach this level of effect. The Federal agency or the designated non-Federal representative should consult with the Service to seek written concurrence that adverse effects are not likely. Be sure to include all of the information and documentation used to reach your decision with your request for concurrence. The Service must have this documentation before issuing a concurrence.
- *Is likely to adversely affect* - adverse effects to listed species may occur as a direct or indirect result of the proposed action. For this determination, the effect of the action is neither discountable nor insignificant. If the overall effect of the proposed action is beneficial to the listed species but the action is also likely to cause some adverse effects to individuals of that species, then the proposed action “is likely to adversely affect” the listed species. The analysis should consider all interrelated and interdependent actions. An “is likely to adversely affect” determination requires the Federal action agency to initiate formal section 7 consultation with our office.

Regardless of the determination, the Service recommends that the Federal agency maintain a complete record of the evaluation, including steps leading to the determination of effect, the qualified personnel conducting the evaluation, habitat conditions, site photographs, and any other related information. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at: <http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>.

### Migratory Birds

For projects that may affect migratory birds, the Migratory Bird Treaty Act (MBTA) implements various treaties and conventions for the protection of these species. Under the MBTA, taking, killing, or possessing migratory birds is unlawful. Migratory birds may nest in trees, brushy areas, or other areas of suitable habitat. The Service recommends activities requiring vegetation removal or disturbance avoid the peak nesting period of March through August to avoid destruction of individuals, nests, or eggs. If project activities must be conducted during this time, we recommend surveying for nests prior to conducting work. If a nest is found, and if possible, the Service recommends a buffer of vegetation remain around the nest until the young have fledged or the nest is abandoned.

For additional information concerning the MBTA and recommendations to reduce impacts to migratory birds please contact the U.S. Fish and Wildlife Service Migratory Birds Office, 500 Gold Ave. SW, Albuquerque, NM 87102. A list of migratory birds may be viewed at <https://www.fws.gov/birds/management/managed-species/migratory-bird-treaty-act-protected-species.php>. Guidance for minimizing impacts to migratory birds for projects including communications towers can be found at: <https://www.fws.gov/birds/management/project-assessment-tools-and-guidance/guidance-documents/communication-towers.php>. Additionally, wind energy projects should follow the wind energy guidelines

<https://www.fws.gov/birds/management/project-assessment-tools-and-guidance/guidance-documents/wind-energy.php> ) for minimizing impacts to migratory birds and bats.

Finally, please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan <https://www.fws.gov/birds/management/project-assessment-tools-and-guidance/guidance-documents/eagles.php>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

## Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

**Austin Ecological Services Field Office**

10711 Burnet Road, Suite 200

Austin, TX 78758-4460

(512) 490-0057

## Project Summary

Consultation Code: 02ETAU00-2018-SLI-1395

Event Code: 02ETAU00-2018-E-02717

Project Name: Bakersfield to Solstice Transmission Line Project

Project Type: TRANSMISSION LINE

Project Description: Bakersfield to Solstice Transmission Line Project

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/30.90836250139582N102.83896500786192W>

TRANSMISSION  
LINE PROJECT



Counties: Pecos, TX

## Endangered Species Act Species

There is a total of 13 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 3 of these species should be considered only under certain conditions.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries<sup>1</sup>, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

- 
1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

## Birds

NAME	STATUS
<p>Least Tern <i>Sterna antillarum</i></p> <p>Population: interior pop.</p> <p>No critical habitat has been designated for this species.</p> <p>This species only needs to be considered under the following conditions:</p> <ul style="list-style-type: none"> <li>▪ Wind Energy Projects</li> </ul> <p>Species profile: <a href="https://ecos.fws.gov/ecp/species/8505">https://ecos.fws.gov/ecp/species/8505</a></p>	Endangered
<p>Mexican Spotted Owl <i>Strix occidentalis lucida</i></p> <p>There is <b>final</b> critical habitat for this species. Your location is outside the critical habitat.</p> <p>Species profile: <a href="https://ecos.fws.gov/ecp/species/8196">https://ecos.fws.gov/ecp/species/8196</a></p>	Threatened
<p>Northern Aplomado Falcon <i>Falco femoralis septentrionalis</i></p> <p>Population: Wherever found, except where listed as an experimental population</p> <p>No critical habitat has been designated for this species.</p> <p>Species profile: <a href="https://ecos.fws.gov/ecp/species/1923">https://ecos.fws.gov/ecp/species/1923</a></p>	Endangered
<p>Piping Plover <i>Charadrius melodus</i></p> <p>Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered.</p> <p>There is <b>final</b> critical habitat for this species. Your location is outside the critical habitat.</p> <p>This species only needs to be considered under the following conditions:</p> <ul style="list-style-type: none"> <li>▪ Wind Energy Projects</li> </ul> <p>Species profile: <a href="https://ecos.fws.gov/ecp/species/6039">https://ecos.fws.gov/ecp/species/6039</a></p>	Threatened
<p>Red Knot <i>Calidris canutus rufa</i></p> <p>No critical habitat has been designated for this species.</p> <p>This species only needs to be considered under the following conditions:</p> <ul style="list-style-type: none"> <li>▪ Wind Energy Projects</li> </ul> <p>Species profile: <a href="https://ecos.fws.gov/ecp/species/1864">https://ecos.fws.gov/ecp/species/1864</a></p>	Threatened

## Fishes

NAME	STATUS
<p>Leon Springs Pupfish <i>Cyprinodon bovinus</i></p> <p>There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat.</p> <p>Species profile: <a href="https://ecos.fws.gov/ecp/species/1135">https://ecos.fws.gov/ecp/species/1135</a></p>	Endangered
<p>Pecos Gambusia <i>Gambusia nobilis</i></p> <p>No critical habitat has been designated for this species.</p> <p>Species profile: <a href="https://ecos.fws.gov/ecp/species/460">https://ecos.fws.gov/ecp/species/460</a></p>	Endangered

## Snails

NAME	STATUS
Diamond Tryonia <i>Pseudotryonia adamantina</i> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/5401">https://ecos.fws.gov/ecp/species/5401</a>	Endangered
Gonzales Tryonia <i>Tryonia circumstriata</i> (=stocktonensis) There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/5611">https://ecos.fws.gov/ecp/species/5611</a>	Endangered
Pecos Assiminea Snail <i>Assiminea pecos</i> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/4519">https://ecos.fws.gov/ecp/species/4519</a>	Endangered

## Crustaceans

NAME	STATUS
Pecos Amphipod <i>Gammarus pecos</i> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/4290">https://ecos.fws.gov/ecp/species/4290</a>	Endangered

## Flowering Plants

NAME	STATUS
Lloyd's Mariposa Cactus <i>Echinomastus mariposensis</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/5992">https://ecos.fws.gov/ecp/species/5992</a>	Threatened
Pecos (=puzzle, =paradox) Sunflower <i>Helianthus paradoxus</i> There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/7211">https://ecos.fws.gov/ecp/species/7211</a>	Threatened

## Critical habitats

There are 6 critical habitats wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Diamond Tryonia <i>Pseudotryonia adamantina</i> <a href="https://ecos.fws.gov/ecp/species/5401#crithab">https://ecos.fws.gov/ecp/species/5401#crithab</a>	Final
Gonzales Tryonia <i>Tryonia circumstriata</i> (=stocktonensis) <a href="https://ecos.fws.gov/ecp/species/5611#crithab">https://ecos.fws.gov/ecp/species/5611#crithab</a>	Final
Leon Springs Pupfish <i>Cyprinodon bovinus</i> <a href="https://ecos.fws.gov/ecp/species/1135#crithab">https://ecos.fws.gov/ecp/species/1135#crithab</a>	Final

NAME	STATUS
Pecos (=puzzle, =paradox) Sunflower <i>Helianthus paradoxus</i> <a href="https://ecos.fws.gov/ecp/species/7211#crithab">https://ecos.fws.gov/ecp/species/7211#crithab</a>	Final
Pecos Amphipod <i>Gammarus pecos</i> <a href="https://ecos.fws.gov/ecp/species/4290#crithab">https://ecos.fws.gov/ecp/species/4290#crithab</a>	Final
Pecos Assiminea Snail <i>Assiminea pecos</i> <a href="https://ecos.fws.gov/ecp/species/4519#crithab">https://ecos.fws.gov/ecp/species/4519#crithab</a>	Final





ENERGY,  
INSTALLATIONS  
AND ENVIRONMENT

OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE  
3400 DEFENSE PENTAGON  
WASHINGTON, DC 20301-3400

May 23, 2018

Lisa Barko Meaux  
Project Manager  
Power Engineers, Inc.  
16825 Northchase Dr  
Suite 1200  
Houston, TX 77060  
281-765-5507  
[lisa.barko@powereng.com](mailto:lisa.barko@powereng.com)

Dear Ms. Meaux,

As requested, the DoD Military Aviation and Installation Assurance Siting Clearinghouse coordinated within the DoD, an informal review of the Bakersfield to Solstice Transmission Line project. The results of our informal review indicated that the proposed transmission line project located in Pecos County, TX, as proposed, will have minimal impact on military operations conducted in the area.

Please note that this informal review by the DoD Military Aviation and Installation Assurance Siting Clearinghouse does not constitute an action under 49 United States Code Section 44718 and that the DoD is not bound by the conclusion arrived at under this informal review. Please contact me at [steven.j.sample4.civ@mail.mil](mailto:steven.j.sample4.civ@mail.mil) or at 703-571-0076 if you have any questions.

Sincerely,

Steven J. Sample  
Deputy Director  
Military Aviation and Installation  
Assurance Siting Clearinghouse

**From:** [Meaux, Lisa](#)  
**To:** [justin.criggs@usace.army.mil](mailto:justin.criggs@usace.army.mil)  
**Cc:** [Williams, Denise](#)  
**Subject:** Bakersfield to Solstice 345-kV Transmission Line Project  
**Date:** Thursday, February 15, 2018 12:38:22 PM  
**Attachments:** [Bakersfield\\_Solstice\\_AgencyContact\\_USACE Alb. District\\_2018-02-15.pdf](#)  
[Bakersfield\\_Solstice\\_AgencyContact\\_11x17\\_20180125.pdf](#)

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Mr. Riggs,

Thank you for your call on February 13, 2018. As requested, attached is a copy of the letter and map that was sent to Lieutenant Booth in Albuquerque, New Mexico on January 29, 2018. Thank you for your interest in the Bakersfield to Solstice 345-kV Transmission Line Project. If you have any questions after reviewing the letter please give me a call at 281-765-5507.

Thank you,

Lisa

Lisa Barko Meaux

Project Manager

Environmental Department Manager

16825 Northchase Drive, Suite 1200

Houston, Texas 77060

281-765-5507 direct

713-962-8476 cell

[lisa.barko@powereng.com](mailto:lisa.barko@powereng.com)

**POWER Engineers, Inc.**

[www.powereng.com](http://www.powereng.com)

**From:** [Morgan, David](#)  
**To:** [Williams, Denise](#); [Severud, Kirsten](#)  
**Cc:** [Huebel, Kenneth](#)  
**Subject:** FW: TXNDD Request for the proposed Bakersfield – Solstice Transmission Line Project  
**Date:** Tuesday, January 23, 2018 4:37:55 PM  
**Attachments:** [morgan\\_20180117b.zip](#)


---

FYI

DAVID MORGAN  
BIOLOGIST II

[512-735-1818](#)

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**From:** Texas Natural Diversity Database [<mailto:TexasNatural.DiversityDatabase@tpwd.texas.gov>]  
**Sent:** Tuesday, January 23, 2018 2:52 PM  
**To:** Morgan, David  
**Cc:** Teta, Sairah; Severud, Kirsten  
**Subject:** RE: TXNDD Request for the proposed Transmission Line Project

Mr. Morgan,

The Texas Natural Diversity Database (TXNDD) staff provides the following information in response to your request for data. Please read this entire message for important information regarding your request, additional data sources, and project review.

*\*\*\*Your information request area contains known ecologically significant stream segments and federally designated critical habitat for Leon Springs pupfish, Pecos sunflower, Pecos assiminea snail, Diamond tryonia, Pecos amphipod, and Gonzales tryonia. Use the links below to obtain these data.\*\*\**

#### **Data**

The TXNDD includes federal and state listed and tracked Threatened, Endangered, and Rare species. Please note that **areas where Element Occurrence (EO) data are absent should not be interpreted as an absence of Threatened, Endangered, and Rare species.** *Given the small proportion of public versus private land in Texas, the TXNDD does not include a representative inventory of rare resources in the state. Data from the TXNDD do not provide a definitive statement as to the presence, absence, or condition of special species, natural communities, or other significant features within your project area. These data cannot substitute for an on-site evaluation by qualified biologists.*

#### **Attached documents**

The attached .zip file contains several documents that will guide you in appropriate use, restrictions, and interpretation of TXNDD data as well as a reporting form for submitting data to the TXNDD. The .zip file also includes additional supplemental documents. Below is a list of the files in the attached folder:

- **Shapefile** (*eo\_[last name of requestor]\_yyyymmdd.zip*) of the Threatened, Endangered and Rare species Element Occurrences made from information the TXNDD presently has available for

the requested quad(s) (or within the requested county, by requested species when applicable).

- **EO Report** (*eoreport\_[last name of requestor]\_yyyymmdd.pdf*) of the EOs in the shapefile mentioned above. The **EO Report** includes more detailed information about each EO than what is contained in the attribute table of the shapefile. Link the information in the shapefile to the information in the **EO Report** by *EO ID*. Note that if the number of records in your request area is large, this report may not be included; however, if, in this circumstance, you would like more detailed information about a particular EO, species, or smaller geographic area, you may request those data.
- **EO List** (*eolist\_[last name of requestor]\_yyyymmdd.pdf*) for those requests made by USGS 7.5 minute quadrangles. The **EO List** is a list of species for which we have records in the database in the USGS 7.5 minute quadrangles *surrounding* your request area. The **EO List** is to inform you of federal and state listed and tracked Threatened, Endangered, and Rare species in the area. Note that the EO list is not included in county requests.
- **County List FAQ** (*County\_lists\_FAQ\_20150415.pdf*) produced by the Wildlife Habitat Assessment Program.
- **TXNDD Information** document (*txndd\_information.docx*) that includes a background of the TXNDD, a description of past and current spatial methodology employed, and an explanation of interpretation of the data. Global and subnational (state) conservation ranks are also explained in this document as are the shapefile attributes and EO report sections.
- **TXNDD Reporting Form** (*txndd\_reporting\_form.doc*) for reporting observations of tracked elements to the Texas Natural Diversity Database. To submit data, fill out this form and send it to [TexasNatural.DiversityDatabase@tpwd.texas.gov](mailto:TexasNatural.DiversityDatabase@tpwd.texas.gov). Note that you can also submit data in the form of an Excel spreadsheet or written report.

#### **Project Review, Rare Species County Lists, Project Planning, and BMPs**

This email cannot substitute for an environmental review of your project by TPWD. For information on project review and to access the county lists of protected species and species of greatest conservation need with potential to occur in the county, please visit the Wildlife Habitat Assessment (WHAB) website at [http://tpwd.texas.gov/huntwild/wild/wildlife\\_diversity/habitat\\_assessment/](http://tpwd.texas.gov/huntwild/wild/wildlife_diversity/habitat_assessment/). The WHAB website includes several resources to consider while planning your project to minimize impacts to fish and wildlife resources, including information /guidelines on Wind Energy projects, Transmission Line projects, Communication Towers, and Karst Zones (Travis, Williamson, and Bexar Counties).

#### **Ecologically Significant Stream Segments**

If your information request area contains known ecologically significant stream segments, the data can be obtained at

[http://tpwd.texas.gov/landwater/water/conservation/water\\_resources/water\\_quantity/sigsegs/index.phtml](http://tpwd.texas.gov/landwater/water/conservation/water_resources/water_quantity/sigsegs/index.phtml)

#### **Critical Habitat**

If your information request area contains federally designated critical habitat, the data can be obtained at <http://ecos.fws.gov/crithab/>.

#### **TPWD Managed Areas**

We are no longer providing Managed Area shapefiles and associated Managed Area Reports. To

obtain shapefiles for Wildlife Management Areas and State Park Boundaries, please visit the Texas Parks and Wildlife Department GIS Data Download page (<https://tpwd.texas.gov/gis/data/>).

Sincerely,

Bob Gottfried  
Texas Natural Diversity Database Administrator  
Texas Parks and Wildlife - Wildlife Division  
4200 Smith School Rd  
Austin, TX 78744  
512-389-8744  
[TXNDD Information](#)

**From:** david.morgan@powereng.com [mailto:david.morgan@powereng.com]  
**Sent:** Wednesday, January 17, 2018 4:16 PM  
**To:** Texas Natural Diversity Database <TexasNatural.DiversityDatabase@tpwd.texas.gov>  
**Cc:** sairah.teta@powereng.com; kirsten.severud@powereng.com  
**Subject:** TXNDD Request for the proposed Transmission Line Project

Texas Natural Diversity Database,  
POWER Engineers Inc. is requesting a TXNDD review for the proposed Bakersfield – Solstice  
Transmission Line Project on behalf of the Lower Colorado River Authority and American Electric  
Power. The proposed project study area is within **Pecos County, TX** and is within or near the following  
USGS 7.5 minute quadrangles:

BAKERSFIELD  
BELDING  
BELDING NE  
BELDING NW  
BELDING SW  
BOOTLEG CANYON  
BUENA VISTA  
BUENA VISTA NE  
BUENA VISTA SW  
CAVE MESA NE  
CHANCELLOR  
COYANOSA  
COYANOSA NW  
COYANOSA SE  
COYANOSA SW  
DEEP WELL RANCH  
DEEP WELL RANCH NW  
DEEP WELL RANCH SE  
DIAMOND Y SPRING  
DIAMOND Y SPRING NE  
DIAMOND Y SPRING NW  
DIAMOND Y SPRING SE  
EAST MESA

EAST MESA SW  
EAST OF BARRILLA DRAW NORTH  
FIVEMILE MESA  
FORT STOCKTON EAST  
FORT STOCKTON WEST  
GIRVIN  
GIRVIN NW  
GIRVIN SE  
HACKBERRY DRAW NE  
HACKBERRY DRAW NW  
HOVEY NE  
LEONCITA RANCH  
NORTH OF TUCKER HILL  
OWEGO  
PANTHER BLUFF  
ROCK HOUSE DRAW NE  
ROCK HOUSE DRAW NW  
SADDLE BUTTE  
SHERBINO MESA  
SIERRA MADERA NE  
SIERRA MADERA NW  
SKYSCRAPER PEAK  
TUCKER HILL  
TWELVEMILE MESA

The TXNDD data review is relevant for the routing study and environmental assessment for the project. The review deliverable should include an ArcGIS file of element occurrences, Element Occurrence Record List and EOR Report for each of the USGS quadrangles listed.

Thank you,

DAVID MORGAN  
*BIOLOGIST II*

512-735-1818

**POWER Engineers, Inc.**  
[www.powereng.com](http://www.powereng.com)



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## Meaux, Lisa

---

**From:** Jessica Schmerler <Jessica.Schmerler@tpwd.texas.gov>  
**Sent:** Wednesday, February 07, 2018 9:26 AM  
**To:** Meaux, Lisa  
**Subject:** Proposed Bakersfield to Solstice 345-kV Transmission Line Project, Pecos County

Hi Lisa,

Could you send me the study area shapefile and substation locations shapefile for the above-referenced project? Please send the files unzipped as our system kicks back zipfiles.

Thanks!  
Jessica

Jessica E. Schmerler  
Texas Parks and Wildlife Department  
Wildlife Division - Habitat Assessment Program  
4200 Smith School Road  
Austin, TX 78744

Phone: (512)389-8054  
Fax: (512)389-4599  
[Jessica.schmerler@tpwd.texas.gov](mailto:Jessica.schmerler@tpwd.texas.gov)

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Dallas

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Fort Worth

---

Carter P. Smith  
Executive Director

March 9, 2018

Ms. Lisa Barko Meaux  
Project Manager  
POWER Engineers, Inc.  
16825 Northcase Drive, Suite 1200  
Houston, TX 77060

RE: LCRA Transmission Services Corporation and AEP Texas Inc. Proposed  
Bakersfield to Solstice 345-kilovolt Transmission Line Project; Pecos  
County, Texas

Dear Ms. Meaux:

Texas Parks and Wildlife Department (TPWD) received the preliminary information request regarding the above-referenced proposed transmission line project. TPWD staff has reviewed the information provided and offers the following comments concerning this project.

Please be aware that a written response to a TPWD recommendation or informational comment received by a state governmental agency may be required by state law. For further guidance, see the Texas Parks and Wildlife Code, Section 12.0011. For tracking purposes, please refer to TPWD project number 39291 in any return correspondence regarding this project.

**Project Description**

LCRA Transmission Services Corporation (LCRA TSC) and AEP Texas Inc. (AEP Texas) are jointly proposing to build and operate a new 345-kilovolt (kV) transmission line in Pecos County, Texas. The proposed 345-kV line will extend between the existing LCRA TSC Bakersfield Substation located approximately six miles north of Interstate Highway (IH) 10 and one mile west of Farm-to-Market (FM) 1901 and the existing AEP Texas Solstice Substation located approximately 25 miles west of the City of Fort Stockton along IH 10. This entire project will be approximately 70 miles long, depending on the final route. LCRA TSC will construct, own, and operate the eastern half of the transmission line (connecting to the Bakersfield Substation) and AEP Texas will construct, own, and operate the western half of the transmission line (connecting to the Solstice Substation).

POWER Engineers, Inc. (POWER) is preparing an Environmental Assessment (EA) and Alternative Route Analysis for LCRA TSC and AEP Texas to support their joint application for an amendment to each of their existing Certificates of Convenience and Necessity (CCNs) from the Public Utility Commission of Texas (PUC). POWER is gathering data on the existing environment and identifying environmental and land use constraints within the study area. LCRA TSC, AEP



Texas, and POWER will identify potential alternative route segments that consider the data gathered regarding environmental and land use constraints.

**Recommendation:** TPWD recommends using existing facilities whenever possible. Where new construction is the only feasible option, TPWD recommends routing new transmission lines along existing roads, pipelines, transmission lines, or other utility rights-of-way (ROW) and easements to reduce habitat fragmentation. By utilizing previously disturbed, existing utility corridors, county roads, and highway ROW, adverse impacts to fish and wildlife resources would be mitigated by avoiding and/or minimizing the impacts to undisturbed habitats. Please see the attached *TPWD Recommendations for Electrical Transmission/Distribution Line Design and Construction*. Please review the recommendations and incorporate these measures into design and construction plans.

#### **Conservation Easements**

There is one conservation easement (known to TPWD) within the study area (Diamond Y Spring Macrosite Easement – Nature Conservancy). A map showing this conservation easement is attached for your reference. A conservation easement is a legal agreement between a landowner and a land trust or governmental agency that permanently limits uses of the land (including future fragmentation) to protect and conserve the land's natural values such as fertile soils, mature trees, and wildlife habitat. Lands with conservation easements protect existing wildlife habitat from future fragmentation and therefore have greater environmental integrity than comparable lands without conservation easements. Potential fragmentation of wildlife habitat from transmission line construction on properties where conservation agreements serve to protect the state's natural resources now and in the future is of concern to TPWD.

**Recommendation:** TPWD recommends properties protected by conservation easements be identified in the constraints analysis and avoided during development of alternative routes. Data sources for the location of these properties include online databases such as the Protected Areas Data Portal and the National Conservation Easement Database, as well as available county records. If properties protected by conservation easements would be affected, TPWD recommends the length of routes through these properties be included in any accounting of alternative route impacts presented in the EA.

#### **Managed Areas**

The following publicly managed areas tracked by TPWD are present within the study area. A map showing these managed areas is attached for your reference.

Ms. Lisa Barko Meaux  
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March 9, 2018

Diamond Y Spring Preserve (The Nature Conservancy)  
City Park (City of Fort Stockton)  
Lannom Park (City of Fort Stockton)  
James Rooney Memorial Park (City of Fort Stockton)  
Name Unknown Park (City of Fort Stockton)  
Name Unknown Park (City of Fort Stockton)

Chapter 26 of the Texas Parks and Wildlife Code provides that a department, agency, political subdivision, county, or municipality of this state may not approve any program or project that requires the use or taking of public lands unless it holds a public hearing and determines that there is “no feasible and prudent alternative to the use or taking of such land”, and the project “includes all reasonable planning to minimize harm to the land...resulting from the use or taking.” If TPWD Park Grant funds were used for any of the above-listed parks, then coordination with the Grants-In-Aid Branch of TPWD and local park administrators is necessary to prevent conversion of grant assisted lands to other than public outdoor recreation use – as prohibited by Section 6(f) of the Land and Water Conservation Act.

**Recommendation:** TPWD recommends avoiding route placement in or near public recreation areas. TPWD is concerned with the placement of transmission lines in close proximity to these sites and the potential for visual impacts to the view shed. Therefore, TPWD recommends considering route alternatives that avoid managed areas.

### **Water Resources**

#### *Federal Law: Clean Water Act*

Section 404 of the Clean Water Act establishes a federal program to regulate the discharge of dredged and fill material into the waters of the United States, including wetlands. The U.S. Army Corps of Engineers (USACE) and the Environmental Protection Agency are responsible for regulating water resources under this act. Although the regulation of isolated wetlands has been removed from the USACE permitting process, both isolated and jurisdictional wetlands provide habitat for wildlife and help protect water quality.

As seen on the attached water resources map, several water crossings, wetlands, and springs are located within the study area. Notable features located within the study area include Comanche Springs, Diamond Y Draw, and Diamond Y Springs.

**Recommendation:** If the proposed project would impact waterways or associated wetlands, TPWD recommends consulting with the USACE for

potential impacts to waters of the United States including jurisdictional determinations, delineations, and mitigation. All waterways and associated floodplains, riparian corridors, springs, and wetlands, regardless of their jurisdictional status, provide valuable wildlife habitat and should be protected to the maximum extent possible. Natural buffers contiguous to any wetlands or aquatic systems should remain undisturbed to preserve wildlife cover, food sources, and travel corridors. During construction, trucks and equipment should use existing bridge or culvert structures to cross creeks, and equipment staging areas should be located in previously disturbed areas outside of riparian corridors.

Destruction of inert microhabitats in waterways such as snags, brush piles, fallen logs, creek banks, pools, and gravel stream bottoms should be avoided, as these provide habitat for a variety of fish and wildlife species and their food sources. Erosion controls and sediment runoff control measures should be installed prior to construction and maintained until disturbed areas are permanently revegetated using site-specific native vegetation. Measures should be properly installed in order to effectively minimize the amount of sediment and other debris entering the waterway.

#### Ecologically Significant Stream Segment

The study area contains Diamond Y Springs and Diamond Y Draw (Leon Creek) which have been designated as an Ecologically Significant Stream Segments (ESSS) from the confluence with Leon Creek in Pecos County to its headwaters in Pecos County for Diamond Y Springs and from the confluence with the Pecos River in Pecos County upstream to its headwaters in Pecos County for Diamond Y Draw (Leon Creek). The designation is based on:

##### Diamond Y Springs:

- Threatened or endangered species/unique communities - Pecos gambusia (Fed.E/St.E); Leon Springs pupfish (Fed.E/St.E); Pecos sunflower (Fed.T/St.T), only known location of Pecos assiminea snail (Fed.E/St.E), Diamond tryonia (Fed.E), and Gonzales tryonia (Fed.E).

##### Diamond Y Draw (Leon Creek):

- Threatened or endangered species/unique communities - Leon Springs pupfish (Fed.E/St.E), Pecos gambusia (Fed.E/St.E); Pecos sunflower (Fed.T/St.T)

Ms. Lisa Barko Meaux  
Page 5 of 16  
March 9, 2018

TPWD has identified ESSs throughout the state to assist regional water planning groups in identifying ecologically unique stream segments under Texas Administrative Code (TAC) Title 31 357.43 and 357.8. Until approved by the legislature this is not a legal designation. The stream segments are identified through extensive review by TPWD staff and are determined to be ecologically important. Information regarding criteria for designation as an ESS can be found on the TPWD website.

**Recommendation:** TPWD recommends avoiding impacts to Diamond Y Springs and Diamond Y Draw (Leon Creek) due to their ecological significance. TPWD generally recommends avoiding routing transmission lines over streams and avoiding construction in and near riparian areas when possible.

### **Migratory Birds**

#### *Federal Law: Migratory Bird Treaty Act*

The Migratory Bird Treaty Act (MBTA) prohibits taking, attempting to take, capturing, killing, selling/purchasing, possessing, transporting, and importing of migratory birds, their eggs, parts and nests, except when specifically authorized by the Department of the Interior. This protection applies to most native bird species, including ground nesting species. The U.S. Fish and Wildlife Service (USFWS) Migratory Bird Office can be contacted at (505) 248-7882 for more information on potential impacts to migratory birds.

As discussed above, several water crossings, wetlands, and springs are located within the study area. Please note that birds typically establish flight corridors along and within river and creek drainages. There is potential for electrocution and collision of large-bodied waterfowl and avian predators with electrical wires near these water features.

**Recommendation:** TPWD recommends routing the transmission line to avoid crossing or disturbing water resources in the project area to the extent feasible. Lines that cross or are located near rivers, creeks, springs, drainages, and wetlands should have line markers installed at the crossings or closest points to the drainages to reduce potential collisions by birds flying along or near the drainages.

For additional information, please see the guidelines published by the USFWS and the Avian Power Lines Interaction Committee (APLIC) in the updated guidance document *Reducing Avian Collisions with Power Lines: State of the Art in 2012*. This manual, released on December 20, 2012, identifies best

practices and provides specific guidance to help electric utilities and cooperatives reduce bird collisions with power lines. A companion document, *Suggested Practices for Avian Protection on Power Lines*, was published by APLIC and the USFWS in 2006. For more information on both documents, please visit the APLIC website.

**Recommendation:** If migratory bird species are found nesting on or adjacent to the project area, they must be dealt with in a manner consistent with the MBTA. TPWD recommends excluding vegetation clearing activities during the general bird nesting season, March 15 through September 15, to avoid adverse impacts to breeding birds. If clearing vegetation during the migratory bird nesting season is unavoidable, TPWD recommends surveying the area proposed for disturbance, as close to the date of construction as possible, to ensure that no nests with eggs or young will be disturbed by operations. TPWD recommends that a 150-foot buffer of vegetation remain around any nests that are observed prior to disturbance. Any vegetation (such as trees, shrubs, and grasses) or other open areas where occupied nests are located should not be disturbed until the eggs have hatched and the young have fledged.

### **Federally-listed Species**

#### *Federal Law: Endangered Species Act*

Federally-listed animal species and their habitats are protected from “take” on any property by the Endangered Species Act (ESA). Take of a federally-listed species can be allowed if it is “incidental” to an otherwise lawful activity and must be permitted in accordance with Section 7 or 10 of the ESA. Federally-listed plants are not protected from take except on lands under federal/state jurisdiction or for which a federal/state nexus (i.e., permits or funding) exists. Any take of a federally-listed species or its habitat without the required take permit (or allowance) from the USFWS is a violation of the ESA.

Texas Natural Diversity Database (TXNDD) records within and adjacent to the study area are shown on the attached TXNDD map for your reference. USFWS Designated Critical Habitat located within the study area is shown on the attached USFWS Designated Critical Habitat map for your reference as well.

The TXNDD is intended to assist users in avoiding harm to rare species or significant ecological features. Given the small proportion of public versus private land in Texas, the TXNDD does not include a representative inventory of rare resources in the state. Absence of information in the database does not imply that a species is absent from that area. Although it is based on the best data available to

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TPWD regarding rare species, the data from the TXNDD do not provide a definitive statement as to the presence, absence or condition of special species, natural communities, or other significant features within your project area. These data are not inclusive and **cannot be used as presence/absence data**. This information cannot be substituted for on-the-ground surveys. The TXNDD is updated continuously based on new, updated and undigitized records; for questions regarding a record, please contact [TexasNatural.DiversityDatabase@tpwd.texas.gov](mailto:TexasNatural.DiversityDatabase@tpwd.texas.gov).

TPWD notes that there are TXNDD records for the following federally-listed species within the study area:

Pecos sunflower (*Helianthus paradoxus*)\* (6 TXNDD records) – Federally- and State-listed Threatened

Pecos gambusia (*Gambusia nobilis*) (3 TXNDD records) – Federally- and State-listed Endangered

Diamond tryonia (*Pseudotryonia adamantina*)\* (1 TXNDD record) – Federally-listed Endangered

Leon Springs pupfish (*Cyprinodon bovinus*)\* (3 TXNDD records) – Federally- and State-listed Endangered

Gonzales tryonia (*Tryonia circumstriata*)\* (1 TXNDD record) – Federally-listed Endangered

Pecos assiminea snail (*Assiminea pecos*)\* (1 TXNDD record) – Federally- and State-listed Endangered

Comanche Springs pupfish (*Cyprinodon elegans*) (1 TXNDD record) – Federally- and State-listed Endangered

\*USFWS Designated Critical Habitat also located within the study area for this species

The Pecos sunflower is restricted to saline, calcareous, heavy-textured soils around cienegas. This species is usually most abundant on perennially wet soils of subirrigated terraces just above the wettest sites. The Pecos sunflower flowers from August to November.

The Pecos gambusia is known to inhabit the Pecos River and tributaries. This species can be found in shallow margins of clear, vegetated spring waters high in calcium carbonate, as well as in sinkhole habitats.

Diamond tryonia is an endemic, aquatic snail, only known from a spring system and associated outflows in Pecos County. This species is found on mud substrates on the margins of small springs and seeps, and marshes in flowing water associated with sedges and cattails.

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The Leon Springs pupfish is endemic to the Leon Creek watershed in the Pecos River system. This species inhabits margins of spring-fed marsh pools, mostly away from vegetation.

Gonzales tryonia is an endemic, aquatic snail, only known from a spring system and associated outflows in Pecos County. This species is found on mud substrates on the margins of small springs and seeps, and marshes in flowing water associated with sedges and cattails.

Pecos assiminea snails are usually found on moist ground or beneath emergent plants within a few centimeters of flowing water.

The Comanche Springs pupfish inhabits freshwater springs and associated marshes and canals. Spawning occurs in various sites ranging from fast-flowing water (spring outflows) to standing water. This species has also been known to inhabit Toyah Creek in addition to Comanche Springs.

**Recommendation:** As previously mentioned, TPWD recommends taking measures to avoid impacts to aquatic and riparian habitats, which would minimize impacts to the above-listed federally-listed species. Waterways in the project area should be spanned, and care should be taken to avoid multiple crossings of creeks and rivers or installing lines parallel to waterways and therefore removing large sections of riparian habitat. River and creek crossings should be located in previously disturbed areas to avoid further fragmentation of the riparian corridors associated with these waterways. TPWD recommends contacting the USFWS for species occurrence data, guidance, permitting, survey protocols, and mitigation for these federally-listed species if they have the potential to be impacted by the proposed project.

### **State-listed Species**

*State Law: Parks and Wildlife Code, Section 68.015*

Section 68.015 of the Parks and Wildlife Code regulates state-listed species. Please note that there is no provision for the capture, trap, take, or kill (incidental or otherwise) of state-listed species. A copy of *TPWD Guidelines for Protection of State-Listed Species*, which includes a list of penalties for take of species, is attached for your reference. State-listed species may only be handled by persons with authorization obtained through TPWD. For more information, please contact the Wildlife Permits Office at (512) 389-4647.

Trans-Pecos black-headed snake (*Tantilla cucullata*) – State-listed Threatened

There is one TXNDD record for the Trans-Pecos black-headed snake located within the study area. This species can be found in steep-sided rocky canyons with pinyon pine, oak, and juniper; hilly grassland with juniper and cholla; streamside woodland with creosotebush, acacia, yucca, and grasses; and low hills of arid grassland with creosotebush, yucca, ocotillo, and agave. This secretive, fossorial snake is usually under cover, underground, or in crevices and may travel on the surface at night during the summer when surface moisture is present.

**Recommendation:** Snakes are generally perceived as a threat and killed when encountered during clearing or construction. Therefore, TPWD recommends that personnel involved in clearing and construction be informed of the potential for the Trans-Pecos black-headed snake to occur in the project area. Personnel should be advised to avoid impacts to this snake as it is non-venomous and poses no threat to humans. TPWD recommends a permitted biological monitor be present during construction to try to relocate protected species if found (to an area that is nearby with similar habitat). TPWD recommends that any translocations of reptiles be the minimum distance possible no greater than one mile, preferably within 100 to 200 yards from the initial encounter location. If the presence of a permitted biological monitor during construction is not feasible, state-listed species observed during construction should be allowed to safely leave the site.

Texas horned lizard (*Phrynosoma cornutum*) – State-listed Threatened

While there are no TXNDD records for this species within the study area, suitable habitat for this species may be present. The Texas horned lizard inhabits open, arid and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush or scrubby trees and soil may vary in texture from sandy to rocky. If present in the project area, the Texas horned lizard could be impacted by ground disturbing activities from construction. A useful indication that the Texas horned lizard may occupy the site is the presence of harvester ant (*Pogonomyrmex barbatus*) nests since harvester ants are the primary food source of Texas horned lizards. Texas horned lizards may hibernate on-site in loose soils a few inches below ground during the cool months from September/October to March/April. Construction in these areas could harm hibernating lizards. Horned lizards are active above ground when temperatures exceed 75 degrees Fahrenheit. If horned lizards (nesting, gravid females, newborn young, lethargic from cool temperatures or hibernation) cannot move away from noise and approaching construction equipment in time, they could be affected by construction activities.

**Recommendation:** TPWD recommends having a permitted biologist survey the project area for any Texas horned lizards that may be in the area that is proposed for disturbance. As previously mentioned, a useful indication that the



Texas horned lizard may occupy the site is the presence of harvester ant nests. The survey should be performed during the warm months of the year when the horned lizards are active. If horned lizards are found on-site, TPWD recommends relocating them off-site to an area that is close-by and contains similar habitat. As previously mentioned, TPWD recommends that any translocations of reptiles be the minimum distance possible no greater than one mile, preferably within 100 to 200 yards from the initial encounter location. After horned lizard removal, the area that will be disturbed during active construction and project specific locations should be fenced off to exclude horned lizards and other reptiles.

- a. The exclusion fence should be constructed with metal flashing or drift fence material.
- b. Rolled erosion control mesh material should not be used.
- c. The exclusion fence should be buried at least 6 inches deep and be at least 24 inches high.
- d. The exclusion fence should be maintained for the life of the project and only removed after the construction is completed and the disturbed site has been revegetated. Any open trenches should be covered over night or inspected every morning to ensure no horned lizards or other reptiles have been trapped.

**Recommendation:** If the project area is found to contain unavoidable habitat of the Texas horned lizard, then TPWD recommends a permitted biological monitor be present during clearing and construction activities to relocate Texas horned lizards encountered during construction. TPWD also recommends providing contractor training where feasible. Because the biological monitor cannot oversee all construction activity at the same time, it's important for the contractor to be able to identify protected species and to be on the lookout for them during construction. TPWD also recommends avoiding impacts to harvester ant mounds where feasible. TPWD understands that ant mounds in the direct path of construction would be difficult to avoid, but contractors should be mindful of these areas when deciding where to place project specific locations and other disturbances associated with construction. If the presence of a biological monitor during construction is not feasible, state-listed species observed during construction should be allowed to safely leave the site.

### **Rare Species**

In addition to state and federally-protected species, TPWD tracks special features, natural communities, and rare species that are not listed as threatened or endangered. These species and communities are tracked in the TXNDD, and TPWD actively promotes their conservation. TPWD considers it important to

evaluate and, if necessary, minimize impacts to rare species and their habitat to reduce the likelihood of endangerment and preclude the need to list these species as threatened or endangered in the future.

There are TXNDD records for the following rare plants located within the study area:

Bigelow's desert grass (*Blepharidachne bigelovii*) – 2 TXNDD records  
Cienega false clappia-bush (*Pseudoclappia arenaria*) – 1 TXNDD record  
Wright's trumpets (*Acleisanthes wrightii*) – 5 TXNDD records  
Alkali spurge (*Chamaesyce astyla*) – 2 TXNDD records  
Bushy wild-buckwheat (*Eriogonum suffruticosum*) – 1 TXNDD record  
Correll's green pitaya (*Echinocereus viridiflorus* var. *correllii*) – 1 TXNDD record  
Havard trumpets (*Acleisanthes acutifolia*) – 1 TXNDD record  
Tharp's blue-star (*Amsonia tharpii*) – 1 TXNDD record  
Leafy rock-daisy (*Perityle rupestris* var. *rupestris*) – 1 TXNDD record  
Longstalk heimia (*Nesaea longipes*) – 5 TXNDD records  
Grayleaf rock-daisy (*Perityle cinerea*) – 3 TXNDD records  
White column cactus (*Escobaria albicolumnaria*) – 1 TXNDD record  
Leoncita false foxglove (*Agalinis calycina*) – 2 TXNDD records  
Rayless rock-daisy (*Perityle angustifolia*) – 1 TXNDD record  
Wright's water-willow (*Justicia wrightii*) – 1 TXNDD record

**Recommendation:** TPWD recommends surveying the project area for the above-listed rare plant species where suitable habitat may be present, prior to construction. The survey should be performed by a qualified biologist at the time of year when these species are most likely to be found, usually during their respective flowering periods. If any of these species are present, plans should be made to avoid adverse impacts to the greatest extent possible. If plants are found in the path of construction, including the placement of staging areas and other project related sites, this office should be contacted for further coordination and possible salvage of plants and/or seeds for seed banking. Plants not in the direct path of construction should be protected by markers or fencing and by instructing construction crews to avoid any harm.

Roundnose minnow (*Dionda episcopa*)  
Ironcolor shiner (*Notropis chalybaeus*)

There are three TXNDD records for the roundnose minnow and one TXNDD record for the ironcolor shiner located within the study area. The roundnose minnow is found within the Pecos River system and inhabits spring-influenced headwater streams. The ironcolor shiner inhabits small to medium sized clear spring-fed streams with an abundance of aquatic vegetation.

**Recommendation:** TPWD recommends avoiding construction during the spawning period of the roundnose minnow (summer) and the ironcolor shiner (March through December) if feasible. Avoiding construction during a species' spawning period may reduce the potential for adverse impacts to water quality and the habitat of these species.

Black-tailed prairie dog (*Cynomys ludovicianus*)

There is one TXNDD record for prairie dogs and one TXNDD record for a prairie dog town within the study area. Black-tailed prairie dogs inhabit dry, flat, short grasslands with low, relatively sparse vegetation, including areas overgrazed by cattle. The black-tailed prairie dog is a keystone species that provides food and/or shelter for rare species tracked by TPWD such as the ferruginous hawk and the western burrowing owl, as well as many other wildlife species.

**Recommendation:** TPWD recommends surveying the project area for prairie dog towns or burrows and species that depend on them. If prairie dog towns or burrows are found in the study area, TPWD recommends avoiding these areas during construction and installing exclusion fence to keep prairie dogs from entering the project area. If prairie dog burrows will be disturbed as a result of the proposed project, TPWD recommends non-harmful exclusion methods be used to encourage the animals to vacate the area prior to disturbance and discourage them from returning to the area during construction. If prairie dogs are encountered on the project site, TPWD recommends contacting a prairie dog relocation specialist. If impacting a portion of a larger colony, time relocation efforts and/or humane removal immediately before construction to discourage recolonization of the project area. Prairie dogs can be encouraged to move away from a project area by mowing overgrown adjacent areas. Conversely, prairie dogs can be discouraged from utilizing areas by not mowing and allowing grass or other tall vegetation to grow or by scraping all vegetation off the project site and leaving soil exposed.

Western burrowing owl (*Athene cunicularia hypugaea*)

While there are no TXNDD records for this species within the study area, suitable habitat for this species may be present. The western burrowing owl is a ground-dwelling owl that uses the burrows of prairie dogs and other fossorial animals for nesting and roosting. When natural burrows are limited, this species will breed in urban habitats which may lead to problems for the owls or their young. The owls opportunistically live and nest in road and railway ROWs, parking lots, baseball fields, school yards, golf courses, and airports. They have also been found nesting on campuses, in storm drains, drainage pipes, and cement culverts, on banks, along irrigation canals, under asphalt or wood debris piles, or openings under concrete

pilings or asphalt. The western burrowing owl is protected under the MBTA, and take of these birds, their nests, and eggs is prohibited. Potential impacts to the western burrowing owl could include habitat removal as well as displacement and/or destruction of nests and eggs if ground disturbance occurs during the breeding season.

**Recommendation:** TPWD recommends that the project area be surveyed for mammal burrows or any urban structures that may provide suitable habitat for burrowing owls. If mammal burrows or any urban structures that may provide suitable habitat would be disturbed as a result of the proposed project, TPWD recommends the burrows or structures be surveyed for burrowing owls. If nesting owls are found, disturbance should be avoided until the eggs have hatched and the young have fledged.

Pecos River muskrat (*Ondatra zibethicus ripensis*)

There are two TXNDD records for the Pecos River muskrat located within the study area. This species is found near creeks, rivers, lakes, drainage ditches, and canals and prefers shallow, fresh water with clumps of marshy vegetation, such as cattails, bulrushes, and sedges.

Kit fox (*Vulpes macrotis*)

There are four TXNDD record for the kit fox located within the study area. This species primarily inhabits open desert, shrubby or shrub-grass habitat.

Western hog-nosed skunk (*Conepatus leuconotus*)

There are four TXNDD records for the western hog-nosed skunk located within the study area. The western hog-nosed skunk inhabits a wide variety of habitats within its range, including woodlands, grasslands, deserts, brushy areas, and rocky canyons in mountainous regions. Dens are in rock crevices, hollow logs, underground burrows, caves, mine shafts, woodrat houses, or under buildings.

Western spotted skunk (*Spilogale gracilis*)

There is one TXNDD record for the western spotted skunk within the study area. The western spotted skunk can be found in open fields, prairies, croplands, fence rows, forest edges, and woodlands.

**Recommendation:** If during construction the project area is found to contain the rare species listed above, TPWD recommends that precautions be taken to avoid impacts to them.

**Recommendation:** Please review the TPWD county list for Pecos County, as rare species in addition to those discussed above could be present, depending upon habitat availability. The USFWS should be contacted for species occurrence data, guidance, permitting, survey protocols, and mitigation for federally-listed species.

Determining the actual presence of a species in a given area depends on many variables including daily and seasonal activity cycles, environmental activity cues, preferred habitat, transiency and population density (both wildlife and human). The absence of a species can be demonstrated only with great difficulty and then only with repeated negative observations, taking into account all the variable factors contributing to the lack of detectable presence. If encountered during construction, measures should be taken to avoid impacting all wildlife.

### **Vegetation**

Based on a review of the Ecological Mapping Systems of Texas (also known as the Texas Ecological Systems Classification Project), the following ecological systems are found within the study area:

- Barren
- Edwards Plateau: Ashe Juniper Motte and Woodland
- Edwards Plateau: Barren or Grassy Cliff/Bluff
- Edwards Plateau: Deciduous Semi-arid Shrubland
- Edwards Plateau: Deciduous Semi-arid Slope Shrubland
- Edwards Plateau: Juniper Semi-arid Shrubland
- Edwards Plateau: Juniper Semi-arid Slope Shrubland
- Edwards Plateau: Riparian Ashe Juniper Forest
- Edwards Plateau: Riparian Ashe Juniper Shrubland
- Edwards Plateau: Riparian Deciduous Shrubland
- Edwards Plateau: Riparian Hardwood – Ashe Juniper Forest
- Edwards Plateau: Riparian Hardwood Forest
- Edwards Plateau: Semi-arid Grassland
- Edwards Plateau: Wooded Cliff/Bluff
- Native Invasive: Juniper Shrubland
- Native Invasive: Juniper Woodland
- Native Invasive: Mesquite – Creosotebush Shrubland
- Native Invasive: Mesquite Shrubland
- Non-native Invasive: Giant Reed
- Non-native Invasive: Saltcedar Shrubland

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- Open Water
- Rolling Plains: Mixedgrass Prairie
- Row Crops
- Southwest: Tobosa - Mesquite Grassland
- Southwest: Tobosa Grassland
- Trans-Pecos: Cliff and Outcrop
- Trans-Pecos: Creosotebush Scrub
- Trans-Pecos: Desert Cienega Marsh
- Trans-Pecos: Desert Pavement
- Trans-Pecos: Desert Wash Barren
- Trans-Pecos: Desert Wash Evergreen Shrubland
- Trans-Pecos: Desert Wash Grassland
- Trans-Pecos: Desert Wash Shrubland
- Trans-Pecos: Hill and Foothill Grassland
- Trans-Pecos: Loamy Plains Grassland
- Trans-Pecos: Marsh
- Trans-Pecos: Mixed Desert Shrubland
- Trans-Pecos: Riparian Barren
- Trans-Pecos: Riparian Shrubland
- Trans-Pecos: Riparian Woodland
- Trans-Pecos: Salty Desert Scrub
- Trans-Pecos: Sparse Creosotebush Scrub
- Trans-Pecos: Succulent Desert Scrub
- Urban High Intensity
- Urban Low Intensity

A map of the ecological systems in the study area is attached for your reference. Additional information about the Ecological Mapping Systems of Texas, including a link to download digital data, can be found at on the TPWD GIS Gallery website.

**Recommendation:** TPWD recommends minimizing impacts to native vegetation to the extent feasible during project design and construction. Unavoidable loss of native vegetation should be mitigated by revegetating areas disturbed by project activities with site-specific native species. A list of native plant species suitable for use in the project area can be developed to fit your specific site needs using the Lady Bird Johnson Wildflower Center Native Plant Database.

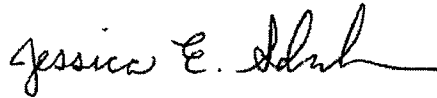
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**Texas Natural Diversity Database**

**Recommendation:** To aid in the scientific knowledge of a species' status and current range, TPWD encourages reporting all encounters of rare, state-listed, and federally-listed species to the TXNDD according to the data submittal instructions found on the Texas Natural Diversity Database website.

I appreciate the opportunity to provide preliminary input on potential impacts related to this project, and I look forward to reviewing the EA and alternative routes analysis. Please contact me at (512) 389-8054 or [Jessica.Schmerler@tpwd.texas.gov](mailto:Jessica.Schmerler@tpwd.texas.gov) if you have any questions.

Sincerely,



Jessica E. Schmerler  
Wildlife Habitat Assessment Program  
Wildlife Division

JES:39291

Attachments (8)

cc: Ms. Karen Hubbard, PUC (w/out attachments)

## **TPWD Recommendations for Electrical Transmission/Distribution Line Design and Construction**

Construction of the line should be performed to avoid adverse impacts not only to the environment but the local bird populations and to restore or enhance environmental quality to the greatest extent practical. In order to minimize the possible project effects upon wildlife, the following measures are recommended.

*TPWD recommends that each electrical company develop an Avian Protection Plan to minimize the risks to avian species that are protected by the Migratory Bird Treaty Act.*

### **Avian Electrocutation Risks**

Birds can be electrocuted by simultaneously contacting energized and/or grounded structures, conductors, hardware, or equipment. Electrocutations may occur because of a combination of biological and electrical design. Biological factors are those that influence avian use of poles, such as habitat, prey and avian species. The electrical design factor is most crucial to avian electrocutations is the physical separation between energized and/or grounded structures, conductors, hardware, or equipment that can be bridges by birds to complete a circuit. As a general rule, electrocution can occur on structures with the following:

- Phase conductors separated by less than the wrist-to-wrist or head-to-foot (flesh-to-flesh) distance of a bird;
- Distance between grounded hardware (e.g. grounded wires, metal braces) and any energized phase conductor that is less than the wrist-to-wrist or head-to-foot (flesh-to-flesh) distance of a bird (Avian Power Line Interaction Committee 2006).

To protect raptors and eagles, procedures should be followed as outlined in:

Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 2006. by Avian Power Line Interaction Committee (APLIC). 2006. Distributed by the Avian Power Line Interaction Committee (APLIC).

Mitigating Bird Collisions with Power Lines: the State of the Art in 1994.  
Avian Power Line Interaction Committee (APLIC). 1994. Edison Electric Institute. Washington D.C.

Line alterations to prevent bird electrocutations should not necessarily be implemented after such events occur, as all electrocutations may not be known or documented. Incorporation of preventative measures along portions of the routes that are most attractive to birds (as indicated by frequent sightings) prior to any electrocutations is much preferred.

Preventative measures include: phase covers, bushing cover, arrester covers, cutout covers, jumper wire hoses, and covered conductors. In addition, perch discouragers may be used to deter birds from landing on hazardous (to birds) pole locations where isolate, covers, or other insulating techniques cannot be used (Avian Power Line Interaction Committee 2006).

Use wood or non-conducting cross arms, for distribution lines, to minimize the possibility of electrical contact with perching birds.

When possible, for distribution lines, install electrical equipment on the bottom cross arm to allow top cross arm for perching.